When Science Finds a Way

Season 2, Episode 2
Cultural burning: could traditional practices prevent modern wildfires?

Show notes

Episode summary

Wildfires are intensifying globally, posing threats to health and Indigenous communities. Join Alisha and Dr Nicole Redvers as they explore cultural burning, a traditional Indigenous technique offering a potential solution to modern wildfire challenges and hear from those bridging traditional practice and science. A fascinating conversation on the future of land management, wildfire resilience and health.

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Mentioned in this episode

Glycophosphate spray – a non-selective herbicide used to kill weeds, especially weeds and grasses that compete with crops.

Further resources

For more information and support if you've been affected by wildfires visit:

- **Emergency Management Assistance Program** - Indigenous Services Canada's Emergency Management Assistance Program (EMAP) helps reserve and other eligible First Nations communities access emergency assistance services.
- **Provincial and territorial wildfire information, Canada** - Information on how the different provinces and territories in Canada respond to and manage wildfires.
- **California State Government LA Fire Resource Page** **-** Provides comprehensive resources for individuals and businesses impacted by the disaster, including assistance programs, insurance claim guidance, and ways to stay informed.
- **Los Angeles County Recovers** **-** Offers services and programs to assist residents affected by the Palisades and Eaton fires, including information on disaster recovery centers and available aid.
- **Federal Emergency Management Agency (FEMA)** - Provides disaster assistance applications and guidance for individuals and businesses affected by the wildfires.
- **American Red Cross Los Angeles** - Offers relief efforts, including disaster recovery centers in Los Angeles and Pasadena, where individuals can access resources and aid from multiple organizations.

Transcript

Alisha Wainwright 00:00:
Hey, Alisha here - before we get into this episode, I just want to acknowledge that we're going to be talking about wildfires, and that the conversation you'll hear was recorded before the devastating events here in LA earlier this year. To be honest, I think it makes the episode even more relevant, so keep listening, and I hope it gives some food for thought. If you've been affected by the wildfires, see the show notes for where you can get more information and support.
(Music starts)

NICOLE CLIP – 00:36 ***"****The question has often been, 'How can we integrate traditional knowledge into what we already know in Western science?' And for me, integration is assimilation, which is basically taking the knowledge and, and, you know, trying to merge it into a Western system. But what about the other way around?"*

Alisha Wainwright 00:53
This is When Science Finds a Way - a podcast about the science changing the world. I'm Alisha Wainwright and this is where you'll hear stories of hope from people on the front line of our biggest health challenges.
And wow, does today's topic feel big and urgent? Wildfires. Over the last two decades, forest fires have become more widespread around the world. These fires aren't just a threat to our homes and our lives. They can also have a devastating impact on people's health - especially those living in Indigenous communities who are often closely tied to the land. So, what can we do - even just in the short term - to mitigate these health impacts? Well, it turns out Indigenous cultures have actually known the answers all along.
And while it may seem counterintuitive, part of the solution is actually more burning. These fires are known as prescribed burns, or controlled burns, or cultural burns, beneficial burns. But the point is, there's now an increasing body of scientific evidence looking at their health benefits and it's helping policymakers understand why it makes sense.
My guest today is someone who has advocated for the use of traditional Indigenous knowledge in the context of global health issues, like wildfires. Dr Nicole Redvers is an Indigenous community and planetary health researcher and Associate Professor at the Schulich School of Medicine and Dentistry at Western University - a leading Canadian centre for health research.
She's a member of the Deninu Kųę First Nation in the Northwest territories of Canada. And I'm thrilled to welcome her to When Science Finds a Way. Hi, Nicole.

Dr. Nicole Redvers 02:37
Hi there.

Alisha Wainwright 02:35
When we look at the global picture, where are we seeing wildfires happen and how is this changing?

Dr. Nicole Redvers 02:41
Well, what's critical here is that, you know, wildfires are a normal experience - you know, it's part of the natural process - particularly within boreal forests. But because of the increasing temperatures that we're seeing around climate change, in fact, heat waves are already five times more likely today than they were 150 years ago. So, because of this, it's creating conditions where moisture is evaporating from our soils, from the vegetation, it's drying out trees, shrubs and grasses - really turning forests into kindling.
And not only that, but the lack of water to drought, you know, creates a lot of stresses on trees, so it decreases their resilience as well and makes them more likely to burn. So, these combinations of the warming planet, - you know, droughts - as a consequence of that. But also short-sighted forest management practices that have really contributed to the increasing destructiveness of wildfires.
Wildfires happen on every single continent except for Antarctica. And, you know, we've seen particularly increases in wildfire activity in boreal forest areas. In fact, about 70 percent, or the majority of the tree cover loss that's been happening, has been in boreal forest areas. And, you know, again, a natural part, but really accelerated with climate change.
Interestingly enough, in tropical areas most of the wildfire related activity has been due to human causes, driven by deforestation and shifting in agricultural practices that, again, decreases the resilience and susceptibility to fires within some of these regions. So, you know, it's a global experience, something that's not exclusive to one region, but absolutely amplified - particularly around boreal forests.

Alisha Wainwright 04:27
Hm, okay. And just for our listeners, boreal forests cover vast expanses of Canada, Alaska, and Russia. They're an important carbon sink and they're generally adapted to withstand colder temperatures. You mentioned how modern land management practices have increased the risk of wildfires. What other examples do we see of this?

Dr. Nicole Redvers 04:50
One great example is the use of glycophosphate spray on forests to kill deciduous trees. And deciduous trees - so the leafy trees that, you know, are growing naturally in many forests - actually act as natural fire breaks. So, when you kill off deciduous trees for the purposes of encouraging coniferous forest growth - because those are valuable for forest industries - you actually take away the natural fire breaks in the community, which means these, you know, fires don't have any backstops.

Alisha Wainwright 05:19
Why are Indigenous communities more vulnerable to the impact of wildfires and their smoke? And what impact does the increased prevalence of wildfires have on these communities?

Dr. Nicole Redvers 05:29
Mm. Well, one thing that's really clear, from the global level, is Indigenous peoples make up about 6 percent of the global population but currently, right now, steward 80 percent of all of the remaining biodiversity on the planet.

So, if you have 6 percent of the population that's stewarding 80 percent of all of the remaining biodiversity on the planet, it means you live in close proximity to nature. So, of course, any impacts that affect that element of nature has the potential to impact communities. And again, from the Canadian context, we've seen, since about 1982, that 98 percent of the smoke related evacuations of communities, due to wildfire related smoke, has been Indigenous communities. So, the data, you know, it's really showing clearly that that's the case.

Part of the problem, you know, with that is that many Indigenous communities have had longstanding and repeated exposure to wildfire smoke over many years because of the amplifications of climate change. And, you know, that's particularly problematic for health when you don't have a lot of preventative strategies within communities to really mitigate the effects of those exposures.

Unfortunately, Indigenous communities don't have a lot of appropriate infrastructure - air filtration systems, for example, in buildings, sealed buildings to keep out smoke. All of these kinds of things contribute to the increase in the exposure to wildfire, which tends to be particularly bad on our health as human beings.
Wildfire smoke tends to have very fine particulates in it. In fact, so small, they're able to be breathed into our lungs, but actually get crossed into our bloodstream, and in fact, are so small that they can actually pass through the barrier to our brains. So that creates the potential for systemic or across body effects, and really is problematic in the long term for repeat and ongoing exposures to wildfire smoke.

Alisha Wainwright 07:22
One person who knows firsthand the health impacts of wildfire smoke is Cody Desautel. Cody is Executive Director of the Colville Tribe, whose reservation is based in North Central Washington State in the U.S. - just near the Canadian border. The reservation stretches over 1.4 million acres, nearly a million of which is forest land.
Cody was a frontline firefighter on the reservation for nearly 30 years, including the period between 2015 and 2021 where they lost 700,000 acres - approximately half of their land to wildfires. He told us what it was like to live and work through it.

(music, into)
Cody 08:04
My memories of the smoke, from particularly in 2015 but for other periods continuing through 2021… air quality was so bad, you couldn't see more than a couple hundred yards. So, it was a situation where you just kind of got a dry cough, and you just accepted the fact that it was going to be a bit of a struggle to breathe, and you were going to have some irritation to your eyes and to your throat.
It was definitely something as a community that we saw with, particularly those sensitive populations. Youth and elders really struggled with it, and we sent a number of people to the hospital for it.
From my perspective, air quality isn't bad until you're struggling to see and struggling to breathe in it. But it was definitely the worst I've seen in my career. And we recognised that, not just while we were on the fire line fighting fire, but while we were in camp, when we got back and even the short breaks we would get to go home periodically, the air quality in the eastern half of the state was bad for a month in Washington.

Wildfires in particular - because they're burning during the hottest, driest parts of the year - their smoke production is high. And typically, we're on the hill again for 16-hour days. Even when we return to base camp, it's in fairly close proximity to the fire, so air quality there isn't very good either. So really, you're exposing your body to, in most fire assignments, 14 days of really poor air quality at best. And there's just not an opportunity to really get away from it - to try to give your body a break from it.

(Music, into)

Alisha Wainwright 09:33
Man! Long days exposed to thick smoke. You can hear why firefighters are especially vulnerable to the health impacts of wildfire smoke.
What do you hear, or what do you glean from, uh, hearing Cody?

Dr. Nicole Redvers 09:47
Yeah, well just some resonance. Uh, you know, growing up in the Northwest Territories, but particularly the last 10 years, you know, 2023 was a great example. We had a region the size of France, Portugal and Spain combined - 238 wildfires, 68 percent of our population evacuated for a period of five weeks due to combinations of wildfires. And being up there, you know, that year, but also in prior years, the smoke sun - which is a very particular looking sun - the ash constantly falling from the sky. But what's particularly, you know, problematic is that because of increasing heat due to climate change, you know, many Indigenous communities, particularly in this case, in circumpolar areas, the homes are not built for heat. They're, they're built for cold. So, they're meant to keep the heat.
So here you have a situation where you're, you're cooking inside because of the heat. But you can't open your window because the air quality is, you know, multiple times over the World Health Organization's standard of quality air. So, you know, heat versus the health effects of the smoke and really being put in challenging positions where it's really risking the health and wellbeing of families and communities.

Alisha Wainwright 10:57
So, when I think about the health risks of a wildfire, immediately - that makes sense to me. But if I have inhaled smoke or something of that nature, been around a fire for a long period of time, what are the long-term health effects that I might face?

Dr. Nicole Redvers 11:09
Well, this is, you know, where the science unfortunately is quite lacking. We have not had sufficient investment in longitudinal and long-term studies around wildfire exposure.
Having said that, we do have some preliminary studies that are coming out that give some potential indication on, you know, what these risks might be - for example, there's been studies showing that people with underlying heart problems carry increased risk for heart attack and cardiovascular issues after, you know, being around wildfire smoke. There's been studies about potentially increase preterm births and low birth weights in pregnant women exposed to smoke. And then also there's been studies done demonstrating evidence of potential increase in the risk of lung cancers as well as brain tumours, which has been preliminary. You know, authors have noted further study on these topics but really those are the only kind of key parameters that we really have right now outside of the obvious

increases in asthma and, you know, other kinds of lung conditions. So, there's really a need for further impacts.
But I will note the mental impacts also have been substantially under focused in the research area. And from anecdotal experience, seeing the mental and emotional and wellbeing effects of peoples has been absolutely substantial but, you know, really a lack of clarity from a research standpoint on what that actually means as well, is really quite lacking.
Alisha Wainwright 12:39
Historically, Indigenous communities would have used various strategies - including a technique called cultural burning - to reduce the risk of high severity wildfires. Can you just briefly explain what this is?

Dr. Nicole Redvers 12:52
Yeah. So, the cultural burning is very much a community-based practice. And because we have such a diversity of Indigenous nations across many continents, of course, the nature of cultural burning, you know, and the techniques used can vary slightly depending on those landscapes; the knowledge that has been gleaned and passed on through generations. And in fact, there's a lot of what we call protocol or guidelines or rules, if we could say, about who becomes fire keepers, who gets that knowledge. Sometimes it's passed on through families - so it's not, you know, necessarily something that everybody, you know, would hold in every single community, but very specific guidelines on how this knowledge is passed on.
And you know, some communities I've heard will look for specific clues on when cultural burning might be appropriate - you know, is the animals having a hard time walking through the forest because the density of the brush, are the berries not as full and plump as they should be. You know, these kinds of observations that give clues on the need to give a little bit of support to forests to help them regenerate and encourage a revitalisation of their process and their cycle, while at the same time ensuring, you know, food sources are accessible to community members as well.
Colonisation, of course, changed that dynamic and those practices. In fact, cultural burning was banned, in much of North America. B.C. or British Columbia, which is on the western part of Canada, was one of the first in 1874 to ban cultural burning. And then the provinces and many states afterwards in the United States followed suit.
And there were very strict fines for continuing to practice cultural burning within Indigenous communities. And we're really in catch up mode right now.

Alisha Wainwright 14:39
Many, many years ago, I went to school and I participated in a prescribed burn. And so, I had learned a little bit about how they function. And one thing, you know - I will just be completely forthright with my ignorance - I had no idea that it was an Indigenous cultural practice. And it's sort of, like, my textbook was reappropriating it as sort of this new novel way and system to help decrease the temperature of fire.

Dr. Nicole Redvers 15:07
Mm hmm. Yeah, it's, it's a common experience, unfortunately, the erasure of Indigenous peoples is a part of many knowledge experiences. In fact, you know, not only pertaining to wildfires, but to other issues around the environment conservation and even health where we have, you know,

pharmaceuticals today that have been informed by plants and medicines that have come from Indigenous communities without appropriate recognition.
And, you know, one of the things I think that's really clear from a terminology standpoint - or should be clear from a terminology standpoint - is we actually create a distinction between the terminology of prescribed fire and what is otherwise known as cultural burning or traditional burning. Because in current Westernised sort of practice, prescribed burns are used, like you read in the textbook, of course. And they're very much processes that are agency driven, so usually by, you know, government agencies that are managing wildfires. They tend to utilise Western knowledge and science as part of their process. They tend to use varying intensity of fire as a part of their, you know, prescribed burns, and they also use, accelerants, you know, to help produce the fire as well as specialised tools. And these are used acutely to prevent an oncoming wildfire, but also in prevention activities.
Whereas cultural burning are Indigenous led; they follow cultural objectives; they're very much Indigenous knowledge driven in regard to when to burn, how to burn; they primarily use slow, cool burns - so fires that people can essentially walk beside; they're very family centred and they use traditional fire ignition methods. So, you know, we like to create those distinctions a little bit to not be confused by the prescribed burns that are often now used by fire management agencies, comparatively to the cultural burning practices that we utilise within communities as well, for very specific purposes.
And what's critically important is that with the control burns, when they're done in our traditional ways, they actually keep the carbon locked up in trees and in fact can actually, you know, keep those elements stored. As we know, carbon emissions are not something that we want. It can help precipitate climate change, but with wildfires, with the very hot burning fires that's not the case. In fact, we release a lot of that carbon into the atmosphere. You know, the smoke, of course, is increased during there. So, there's a lot of, you know, dimensions of the differences, but how we're seeing that intersect with some of the Westernised prescribed burning practices definitely varies depending on the region.
We see some increasing interest - in fact, the federal government here in Canada as well as some of the provinces has really started to partner with Indigenous nations for the purposes of bridging both worlds, if we could say. And that has really been prevalent in other regions - you know, California in 2022, finally, you know, passed a policy that changed the outlaw of cultural burning to support tribes within the California area to mobilise their cultural burning practices again. But again, slower in others, depending on the recognition of Indigenous peoples in specific regions.
I sense as we move forward into the future, that there will be increasing and ongoing interest in partnerships with Indigenous communities around cultural burn practices and what that actually might mean for long term forest management.

(Music, into)

Julia Gillard 18:35

Hello! I'm Julia Gillard, chair of Wellcome. Thanks for listening to our podcast, When Science Finds A Way. Wellcome supports researchers around the world to make discoveries and help solve urgent health challenges. We believe in the power of science to build a healthier future, and the need for inclusive collaborative action to ensure that everyone can benefit. To get involved, visit wellcome.org, that's Wellcome with two l's. Now, back to the story.

Alisha Wainwright 19:08

Well, one piece of research that has been instrumental in encouraging policy change was led by Dr Kari

Nadeau, who has worked alongside Indigenous communities at various points throughout her career and is a leading expert on the health impacts of smoke. Kari is a professor at Harvard School of Public Health, where she's also chair of environmental health.
She's spent over 30 years understanding allergies and asthma, and her lab has been studying air pollution and wildfire effects on children and adults, including forest firefighters.
She has specifically looked at how the smoke from government led prescribed burns - which she calls beneficial burns – compares to wildfire smoke, and she told us about her research.

(Music, into)
Dr. Kari Nadeau 19:54
The reason why I began to be interested in wildfire smoke research and how climate change affects wildfires is two part: number one, because it affected me personally - I had to evacuate my home and my family and all my animals, three times, due to wildfires in California. And that's based on where we live - very near a forest - very near the forests that were affected by wildfires, unfortunately. And number two, because I'm also a practicing physician and I see children and adults for allergy, asthma, and immune issues. And unfortunately, wildfire smoke affects all of those three diseases, very significantly.
So, I was seeing more and more people coming into my clinic because of worsening of disease or starting of disease due to wildfire smoke. So those two things really got me thinking about how I could be a source of change through research on wildfire smoke.
Most wildfires are not wild anymore. They oftentimes contain particles from commercial buildings or residential buildings. And so, because of that, there can be microplastics. There can be detergents that are up in smoke. There's paint thinners and products that you would not want to be up in the air getting exposed to people. And unfortunately, those are in the smoke.
And what we've learned about smoke is that over time, just because it's getting diluted in the atmosphere, does not mean that it's less toxic. In fact, unfortunately, as it reacts with water in the atmosphere, as it reacts with sunlight coming down, it then is made into products like ozone and other types of chemicals that are actually more dangerous for us over time.
But we're doing research on solutions and part of those solutions are beneficial fires. And so, we've taken the same exact community that over time, that community was exposed to wildfire smoke. And then the same community was then, months later, exposed to beneficial fire. And then we compared their blood, we compared their lungs, we compared the air. And the air from the wildfire smoke was much more toxic. The beneficial fire, you could barely pick up the smoke particles. And importantly, in the blood, it was much better - the blood immune cells of the beneficial fire were much healthier than the blood of the same people that got exposed to wildfire smoke.
So that tells me a lot - that beneficial fires are not only helpful to prevent wildfires from raging and getting severe, but they're not as risky as people originally thought. So, we took that data to the WHO, to others, published that data, and now policymakers are using it to incorporate beneficial fire. We were able to use a very small study and say that this is important to adapt, not just in the places where traditional peoples live, but also around the world.

(music, into)
Alisha Wainwright 23:06

As Kari said, it was a small sample size but she told us, the fact that they were the same people they were looking at, made it rigorous enough to be significant. And the findings quickly translated to policy recommendations in the U.S. Her research is actually cited in the National Prescribed Fire Act - which has been brought to Congress three times, and 2023's Federal Wildfire Commission report, which we're going to hear about later on.
How urgent is it that we act on findings like this?

Dr. Nicole Redvers 23:39
Well, I think it's very urgent and, you know, in fact, overdue - well overdue. You know I'm very happy to hear of this kind of research going forward but frankly it's unfortunate that it takes Westernised research to demonstrate, you know, what we've been saying for generations - the need and health of cultural burns is integral to the health of the forest but also the health of us. And this just helps to back up, you know, some of the traditional knowledge approaches and the rationale for why communities have been doing this for generations. We knew that there were benefits to this. Communities knew that there were benefits to this. And, you know, the science is just catching up now to demonstrate - of course, you know, through Western terminologies and scientific approaches - why this conversation needs to keep going forward, quickly.

Alisha Wainwright 24:31
Cody - the firefighter we heard from earlier - told us about how cultural burns, which he calls prescribed burns, are being used on the Colville Reservation to help manage the forests, and what it feels like to work through one.

(sound of helicopter, into)
Cody Desautel 24:47
So, on the reservation, we recognise that fire is a critical part of ecosystem function. These are fire adapted ecosystems and tribes have used fire to manage the landscape for thousands of years.
Fire primarily needed to happen on a fairly regular interval to keep fuel loadings at a fairly low rate, to make sure that you were creating conditions that were conducive for wildlife habitat and cultural and medicinal plants. So, for Colville, our management is driven by guidance we've received from our tribal membership. So, a lot of the tribal elders understand how we used to use fire, why we used fire, and we use that to help direct our current management. And I mean, they had amazing ability to recognise when it was the right time. They were very aware of seasonally where they should be and what was the appropriate thing to do at that time of year. This is based on thousands of years of culture and tradition passed down.
A prescribed burn is a very deliberate act - so there's a certain management objective we're trying to accomplish. Operationally prescribed fire starts with first the test fire to make sure that fuels and conditions are right, then we either light those with drip torches by hand, or we have aerial ignition usually from a helicopter. And we'll do that based on direction from a burn boss that ensures that we're getting the right fire intensity, the right flame lengths. So, we want to consume a certain amount of fuel, but we don't want to put so much fire on the landscape that it causes damage.
So, on a prescribed burn, we've got considerably more control of smoke production - how much fire we put on the ground - and then duration. So, we'll start the burn in the morning, have it for the most part concluded by the mid part of the day, and then do some type of monitoring or mop up towards the end

of the day. And once those are done again - because they produce less smoke - there's not really much residual smoke that ends up in and around communities when firefighters get to go home at night. So, the total exposure is considerably less than what you would see in a wildfire situation.
We've got a pretty good data set that tells us what's been successful from a fire severity reduction perspective. So, areas that we had burned, we absolutely saw lower fire behaviour, lower fire severity, and it gave us opportunities for suppression where we didn't have those in places that hadn't had received some type of fuel or forest health treatment.

(sound of burning, into)

Alisha Wainwright 27:13
You can really hear why a cultural burn is easier on the body. And speaking from personal experience, having participated in a prescribed burn, we didn't even have to go that far away from the burn, to protect ourselves from the smoke because it was such a low-grade thing.

Dr. Nicole Redvers 27:31
Mm hmm. Yeah, absolutely. It's, uh, you know, it's a fire you can walk beside - that's kind of the designation. It's not something that's - something to be feared or something to be scared, you know, it is a relation to us in some senses - that fire energy. So, there's a real respect that comes from that process but a real trust in the knowledge that has really fostered the ability to do these kinds of burns safely.

Alisha Wainwright 27:55
So, Kari and Cody have been able to bring their views and expertise together as part of President Biden's U.S. Federal Wildfire Commission. This was a diverse group brought together to recommend improvements to how wildfire is managed across the U.S. It included federal agencies, state, local, and tribal governments, as well as scientists and the private sector. Its final report was published in 2023, which recommended the use of beneficial burns, along with other measures, to reduce the risk of wildfires. We spoke with both Kari and Cody about what it was like to work together as part of the commission and how they were able to learn from each other.

(Music, intro)

Cody Desautel 28:39
So, I felt fortunate to be included as part of the Wildfire Commission. I know a fair bit about forestry and fire but there's a lot of aspects of fire management that I didn't really think about in the past - particularly when we look at the human health impacts of smoke.
Having fought fire for over 25 years at that point, having been through a lot of fire classes, this still wasn't something we were messaging to the firefighting workforce - what the potential impacts were and, especially long-term impacts, of exposure to really hazardous air quality. So having exposure to those people to understand what the total impacts of fire are.

Dr. Kari Nadeau 29:15

While we were learning about the science of how to better help the forest be managed, I was learning a lot about the automatically present science and traditional ecological knowledge that Indigenous communities had. And unfortunately, there's a lot of history there about how discriminatory and how difficult it has been for Native communities for many parts of their lives. And now I'm so glad that we're listening more to their native and important educational knowledge to be able to help our planet.

Cody Desautel 29:53
So, I think there's a lot of opportunity now, that modern science is starting to demonstrate that what tribal people have said for decades is absolutely true. And to the extent that we can just include Indigenous people in these planning and management groups - they will provide those perspectives that get us to a climate change solution much sooner.

Dr. Kari Nadeau 30:13
And importantly, there's a venn diagram. There's a lot of science that has helped us progress as humans on this planet, and that science has helped us with vaccines, has helped us with medicines that prevent disease, and that treat disease. But in that, we also need to be humble and know that the traditional ecological knowledge of how to take care of water, soil, air - is part of the Indigenous communities that oftentimes verbally was passed down generation to generation. And we don't want to extract knowledge we want to combine knowledge in a venn diagram to best help synergistically.
I've learned a lot from Indigenous communities in the Pacific Islands in terms of heat and how to create crops that are resilient to heat. I've learned a lot from Indigenous communities in Kenya, for example, in the Maasai culture, as to how they are a nomadic culture and learn how to plant and learn how to migrate.
So, within all of that, I think we as people that oftentimes don't know this knowledge, we can work more with Indigenous communities. And I think the forest management is a great example of that, but there's so much more.

Cody Desautel 31:25
I've never seen as interdisciplinary work groups as I'm seeing now. When I started my career 20 years ago, we didn't look across the fence to see what everybody else was doing and we really should have been.
So, I think there's an awareness now that disturbance moves across the landscape regardless of political boundaries or jurisdictional boundaries. So, if we're going to solve this wildfire crisis, we absolutely need to be working together regardless of who your paycheck comes from.

(music, intro)

Alisha Wainwright 31:53
As we heard there, Kari and Cody are hopeful that there can be a collaborative approach to how we mitigate the impacts of climate change.
Are you hopeful that more diverse voices and perspectives are being included in science and policy spaces?

Dr. Nicole Redvers 32:09

I am hopeful and I think there's a few caveats to that, that I often like to highlight - is there's been, as noted, an increasing interest around Indigenous traditional knowledges, which are inclusive of Indigenous traditional ecological knowledges.
But one concern that I've had is that there seems to be an elevation and a focus on the knowledges and not the peoples. And, you know, the knowledge doesn't come without the people. So, it really needs to be ensured, as this progress moves forward, to avoid that extractive bit that Dr Nadeau was talking about - that it is Indigenous peoples and their knowledges that we're platforming as part of this interest. And then also ensuring, you know, one of the things that I've seen is that as the interest has increased, the question has often been, 'How can we integrate traditional knowledge into what we already know in Western science?' And for me, integration is assimilation - which is basically taking the knowledge and, you know, trying to merge it into a Western system.
But what about the other way around? Why are we not, you know, thinking about how do we actually integrate or bridge Western systems to Indigenous systems that have done this? Why can't the Indigenous be the centred, you know, on this component or, look at this bridging and partnership instead of this idea.

Alisha Wainwright 33:24
This mining.

Dr. Nicole Redvers 33:25
…of merging of different – exactly. So, there's some delicacy and nuance, I think, around the language that's really important as we work towards implementation of this area and forge new ground. As, you know, Cody was noting that this is a new space now where, partnerships and diverse groups are working together – and I'm hopeful that that's there - but I do, you know, put those caveats on those conversations and movements - just being mindful of those points going forward.

Alisha Wainwright 33:53
What else needs to be done to bring Indigenous people to the table in the face of climate change?

Dr. Nicole Redvers 33:58
Well, there was a scholar out of the U.S. who, you know, very aptly stated that maybe it's not about bringing Indigenous people to the table. Maybe it's about taking the table and actually burning it in a fire and sitting around and talking. And, you know, why is it a Western table in that sense? You know, so, so there's some reflection there on what that actually means. But what I would like to see - and there's been some positive movement in this regard, in fact, there was an executive order in the United States by the Biden office, that requires now federal departments to consider Indigenous knowledge. In fact, it's an Indigenous knowledge memorandum policy - and that is a requirement now. The operationalisation is coming.
We haven't seen that requirement in Canada. We haven't seen that requirement in other countries. And I would like to see those kinds of federal policies be mandated across governments, where there are requirements on Indigenous lands to ensure that Indigenous peoples and their knowledges are considered, bridged in the conversations - particularly when it comes to the environment - but frankly, in all policy levels, I would like to see that.

The last thing I would like to see as a part of this process is, you know, better amplification of Indigenous led. You know, not about integration or coming to the table, but how can we actually support Indigenous communities doing the things that they've been doing for generations? How can we support them get out of their way, you know, eliminate the barriers, the challenges, the structures that are preventing them from doing the stewardship management approaches that they need to be for their environments? Indigenous led, Indigenous led, Indigenous led.

Alisha Wainwright 35:36
Gosh, I'm just hearing so much about equity, I think, in your comment there, because yeah, you're right. Why is it the Western table? Why is it the Western philosophy that is then being, you know, sprinkled with Indigenous practice? Why is it not either the coming together or the stepping aside and letting something that predated their forest management practices and let the Indigenous communities just sort of, take the lead. Why does it have to be Western led?
Equity in listening, I think, is something that always tends to circle the end of any conversation that we have in terms of bridging these unfortunate gaps of disrespect, mistrust, between Western communities and Indigenous communities.

Dr. Nicole Redvers 36:25
Absolutely. And I think calling out racism, I think is an important component of that when it comes to the de-prioritisation of other knowledge systems based on community practice.
And also, you know, there's a word called epistemicide - which is basically the killing of knowledges - which has been a fundamental principle of Western science, upholding Westernised principles of what science means at the exclusion of other knowledge systems as well. So, there's a lot to impact there that are outside of the conversation today, but really, you know, backing equity and decolonising conversations are really integral within this space, as well as many other climate change spaces.

Alisha Wainwright 37:02
Wow. Thank you so much for just gifting me with your knowledge and understanding and helping me learn more about, not only prescribed burns, but cultural burns and that they're not interchangeable - there's actually nuance to some of these descriptions and terminologies – so. And thank you so much for explaining how wildfire smoke impacts our health and what can be done about that.

(Music starts)

I really appreciate your time, Dr Redvers.
Dr. Nicole Redvers 37:25
Merci. Thank you.

Alisha Wainwright 37:33
Thanks for listening to this episode of When Science Finds a Way. Our thanks to Dr Nicole Redvers, Cody Desautel, and Kari Nadeau.

It's shocking to think that there's this huge wealth of knowledge which hasn't been considered for so long. There is so much that science can learn from other communities and so many reasons why now

is the time to let those communities take the lead in addressing issues like climate change and its impact on our health.

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Next time, we'll be breaking a sweat in the gym to find out exactly how exercise can impact on our mental health.

PROFESSOR JONATHAN ROISER – 39:07 ”*What we’re really interested in is not the effects in the immediate aftermath of your bout of exercise, but the long-term cumulative effects, what’s changing over the weeks and over the months in the brain and in people’s cognition and also the biochemistry as well, to actually drive this improvement from depression*”

Alisha Wainwright: 39:24
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(Music ends)