PLANT PEOPLE Season Two Episode Ten 'Ecotourism: Inspiring a Plant-Powered Economy' Transcript

JENNIFER BERNSTEIN: One of the questions I like to ask on this podcast is, what makes you a plant person?

MAURICIO DIAZGRANADOS: Wow. Yeah, I am absolutely a plant person. I love plants. I see plants everywhere and I have a mission that is planting a tree in every person's head, because I think if we have a plant in our heads, we will help this world becoming better, greener, safer for all of us.

JENNIFER: I think you might be the prototypical plant person if I'm being honest.

JENNIFER BERNSTEIN NARRATION: Dr. Mauricio Diazgranados is our Chief Science Officer here at NYBG, and his bona fides are nothing to scoff at. He's had a passion for plants since he was young, and even served as a forest ranger in his home country of Colombia—one of the most biodiverse nations on Earth.

"Scientific adventurer" is a good way to describe his work, and he strives to raise the profile of botany and environmentalism on a global scale—because what we study here is truly about providing a better future for all. It's a big job!

MAURICIO: We work on biodiversity and evolution. We work on conservation and restoration ecology and on the intersection between plants, people, and culture. I also oversee the laboratories, which are world-class facilities where we carry out research from molecules to ecosystems, the herbarium, which is the probably the world's second largest herbarium and the most important of the Americas; and the library where we are in at the moment, which is the world's largest library on botany.

It's a huge program, I would say. And, we are one of the leading botanical institutions in the world.

JENNIFER NARRATION: Mauricio has a vision; a way of protecting our most precious natural resources by recognizing the presence of plants in everything that we do as humans: from making our summer travel plans, to our hobbies, to taking care of our families.

MAURICIO: Every breath, every meal, even the house where we live, it's a gift from plants. The furniture, the books that we read, the pages of the books are made out of plants; our medicines, our food, our clothes. Our life depends on plants.

JENNIFER NARRATION: Welcome to Plant People. I'm Jennifer Bernstein, CEO & The William C. Steere Sr. President at the New York Botanical Garden.

In this, our final episode of the season, we'll learn how we can all prioritize plants in our day-to-day lives... for the good of humanity, and the world.

And, here at the height of summer travel season, we'll also find out to engage in ecotourism without doing harm to the most breathtaking and ecologically vulnerable places on earth– a problem we need to confront if we're to share the beauty of this planet with everyone.

Mauricio grew up in Colombia. When we sat down together at NYBG, he told me that when he visits the Conservatory here at the garden, it reminds him of home.

MAURICIO: When I walk through the tropical rainforest area in the conservatory, for instance, it's like I'm, uh, meeting my old friends and that brings lots of memories; the smell, the sensation of being among this wonderful diversity. It's really having a piece of home here in New York and it makes me feel motivated to what we do.

JENNIFER: Yeah, so speaking of home, you know, I'm interested to know about the connection that you forged with the natural world growing up and how it led you to the decision to make studying plants your life's work.

MAURICIO: I think my passion for plants started when I was a child. I realized that plants were everywhere and that we were depending on plants. And I wanted to know more about that. And then when I started being curious and going into the forest, I wanted to learn the names. I wanted to learn the properties.

And it became so almost like a passion for me learning this language. And in biology, I found the space for learning about this diversity, but also, the possibility of contributing to a better world by identifying the properties that we could use in plants to help with some critical problems that society needs to address.

JENNIFER: Yeah so speaking of that, I believe I understand that while you were studying to become a botanist, you were also a tour guide. You were doing ecotourism. Can you talk a little bit about that? What was that like?

MAURICIO: Yes. I started as a kid hiking in mountains and got fascinated by the páramos and the Andean forest.

And it's just an unbelievable country with still lots of places to explore. So, as a kid, I was dreaming about being the first to discover waterfalls. And I did that, actually.

JENNIFER: You did?

MAURICIO: Yeah, I discovered some waterfalls. And I think I was with a friend, the first arriving to the peak of a mountain. So I was asked to deliver tours to some people, first in a nature reserve and they were paying me.

That was finishing high school and starting my BSC. I was working every Saturday and Sunday, bringing people to various nature reserves. And obviously when I needed to deliver tours, I needed to learn about ecosystems, the plants, the animals, because they would ask about everything.

That was quite aligned with my study of biology. I really had to study. When I was preparing, for instance, for ecotourism, I had to learn about not just identifying each species, but also learning about their properties, their ecology, their species interactions, and the whole ecosystem. And the importance of this ecosystem.

So I could tell the people what they were visiting. And as I did it, then I created a couple of NGOs to deliver tours. And then I helped the country to create the first law of ecotourism.

And I got certified as a guide of ecotourism. So I have my credential; I can officially, organize tours and bring people to various corners.

JENNIFER: Yes, but you're busy here leading our scientific efforts, so you're not, you're not running, running a tour company. Although you and I had the opportunity to be together in the páramos and to see the frailejones, which I believe you're one of the world's leading experts on this emblematic plant of Colombia.

So I feel compelled to ask you as we venture into this conversation about ecotourism and the sort of benefits and risks of it, to say a word about the frailejones.

MAURICIO: Oh, yes. First, what are the frailejones? Because many people might not know about these are the most spectacular plants that anyone can see.

JENNIFER: You're not biased.

MAURICIO: And I would say that if you are keen on nature, if you are obviously a botanist or a biologist this is one of those species that you need to go and see in person because it's such an incredible plant, such an unusual plant. Some people have described it as something that they couldn't even imagine before seeing them.

Imagine if you were in front of a palm-like plant, but with very hairy leaves; when you touch the leaves, they are thick, they seem like you are touching the ears of a horse, maybe, because of all the hairs. But these hairs are, white, they can be also golden, yellow or silvery.

And then the whole stem of the plant is covered by dead leaves. And these plants strive in an ecosystem that is called the páramo, that is usually very cold, near freezing temperature; very wet, humid, foggy.

And the plants, because of the particular atmospheric conditions, accumulate water inside their tissues. So they are locally known as the plants from which the fresh water comes from. These plants accumulate also protosoil. So soil in primitive formation along the stem; and a lot of animals associated to it.

When you start moving the dead leaves on the stem, you will find lots of little frogs, lizards, some invertebrates, and also vertebrates come and visit these plants and they consume the stem. Or there’s birds coming; visit the flowers. And this is a keystone species.

JENNIFER: Keystone species, meaning that many other species rely on this species.

MAURICIO: Correct. When the species disappears, the whole ecosystem crumbles down.

JENNIFER: Mm hmm.

MAURICIO: So when you go to a páramo ecosystem, you will find these frailejones everywhere dominating the landscape.

JENNIFER: Fields.

MAURICIO: Yeah. Fields and fields for sometimes, in this big páramos, for miles and miles and miles, covering the entire ecosystem.

And it's wonderful. So that was my initial inspiration to study these plants. And I became over the years, a world expert on these plants. I have studied the chemistry of these plants, the ecology, the conservation, the climate change impact. And these plants are such an important species for Colombians and Northern South Americans. There's even pieces of art, statues, paintings, coins, bank notes…

JENNIFER: Yeah, I had never seen anything like these plants. They are absolutely beautiful and seeing them with you was a special treat. It's a good example of the kind of place that people want to see because it connects them deeply to nature and they're unlike anything else you can see in the world, but there's a real tension there, right?

Going to some of these, not just the páramos, but other places where you're going there because you're a nature lover, but you don't want to tread on it in a way that could be destructive. And we've heard a lot about ecotourism, so I'm interested to know what you think, what does it look like when it's done really well in today's context, and what are some of the risks that we should be awake to?

MAURICIO: Yes. When you go to a museum and you are with a good guide in a museum, that guide will bring you through the various galleries and will tell you about each piece of art, will tell about who the painter was or what the painting means, et cetera, et cetera.

And will give you a lot of context. If you go to a mountain with a guide and you don't learn about what you are seeing, that's done in a bad way. The ecotourism should give you an experience similar to the experience that you get when you have a very good tour through a museum.

And obviously if it's done in an inappropriate way, producing an impact on the ground is not sustainable. It would be similar to have a group of tourists visiting an art gallery and damaging the paintings.

JENNIFER: Yeah, poking the art. It's not allowed.

MAURICIO: It’s not allowed. So in the same way, it’s not allowed when you go to a mountain, to make such a strong impact that you are going to damage that environment. So obviously you don't leave trash behind, but also you try not to affect negatively the species that you are walking through. You don't step on species that are important.

You don't take samples of the species. You don't take anything with you really, except for your trash. Obviously, you take it back. But it's to reduce your impact at

the minimum and to learn the maximum so you can understand the importance of those ecosystems and of nature.

JENNIFER: And more and more there are examples of places that you can go where your presence could in fact, be positive, could contribute. So you and I visited a resort that's I think newer in, the Pacific coast in Colombia where they're restoring mangroves along the coast, which is a very important ecological restoration effort and going and staying there is a way of supporting that. There are examples like that, out in the world. So looking for those maybe?

MAURICIO: That's a very good point because it's always very important to involve the local communities into this. When there's local communities, you should try to involve them in the whole process of ecotourism; and not just ecotourism, also ethnotourism. So they see the importance of protecting nature, but also protecting their knowledge, their traditions, their culture; because they realize that that's relevant also to attract tourism.

And also scientific tourism, which we haven't talked, but it's also part of the same group.

JENNIFER: Yeah. What's the distinction that you would draw between ecotourism and scientific tourism?

MAURICIO: Scientific tourism would attract researchers, scientists or naturalists interested in learning or seeing particular groups of species. So you have bird watchers traveling to places because they have unique diversity of birds. Or what is called now the mycotourism. That is, trips that people do to sit and learn about fungi.

JENNIFER: Oh, *myco*, like mycology. Yeah. Yeah. Okay.

MAURICIO: Mycotourism. And they are fantastic. Sometimes you do them at night because you can use UV light to see the fluorescence of fungi on the bark of trees and how you can recognize that forgotten diversity of fungi that is so important.

Many times as part of the activities of scientific tourism, the people attending those trips are asked to contribute with the countings of species or monitoring species. And that is contributing to a particular research.

JENNIFER: So you're an active participant in ongoing research. That's great.

JENNIFER NARRATION: When we come back, we'll find out more about how to prioritize plants every day -- in our businesses, meals, medicine... and, our spending habits. That's coming up after the break. Stay with us.

[BREAK]

JENNIFER NARRATION: Welcome back to Plant People. I'm Jennifer Bernstein and I'm speaking with Dr. Mauricio Diazgranados, Chief Science Officer and Dean of Science at NYBG. During our conversation, we turned our attention to centering plants not just in our travel, but also in the broader global economy.

JENNIFER: I think people are familiar with the term ecotourism. There's another term that I know you all use in your work called bioeconomy. Can you explain what bioeconomy is, what it means?

MAURICIO: Yeah, bioeconomy is that segment of economy that is based on the sustainable utilization of products based on nature; byproducts that are not staple crops or main crops. Bioeconomy is not economy based on fossil fuels, for instance. It's all these area of economy that relies on the world's biodiversity.

JENNIFER: Yeah, I think it's very promising because when we look at the places where there's a real density of biodiversity, there's also a need for people to have thriving livelihoods and be able to care for their families.

How do we protect the Amazon forest, some of the boreal forest, the places that are so critical to our environmental future and also provide a livelihood for the people that live nearby them?

MAURICIO: So one of the ways in which you can achieve that is by thinking about conservation through use. By understanding that your livelihoods depends on that ecosystem because you are using it. You can see that there's an immediate effect on your economy, for instance, on your income.

And by seeing that advantage, that benefit, then you decide to protect that forest. And there's several examples that we could talk about.

But I'll start with one that is one of my favorites. And it's a project that I had in Colombia, with a tropical dry forests in the northeastern part of Colombia and neighboring with Venezuela.

The forest over there is dominated by a tree called the bread nut tree. The local name is guáimaro. In some other areas, it's called the ramon tree, or Mayan – forgotten Mayan nut tree. This is another case of keystone species.

It's the dominant species in the ecosystem, and because of the size of this tree – imagine it's a giant of this forest – is being decimated because of the timber.

Several indigenous cultures use this tree as a source of food. And in fact, the forest where this tree is found is called food forest. The seeds are a source of flour that can be used for baking, but also to make drinks.

And it's really important in their local consumption. So what we did is to investigate the techniques that these indigenous used to utilize this tree. And with the local communities, we helped them to improve the techniques for collecting, harvesting the seeds, classifying the seeds, measuring them, adding value to the product in situ.

So we help them to pack the seeds, et cetera, and to send them to some NGOs that would pack the product properly and distribute the product among restaurants. We invested some time working with chefs to develop recipes that were based on this product.

And at the moment, for instance, those restaurants are buying the product to this NGO, supporting the local communities and these local communities that have added the value in situ are getting the income from the commercialization of this product. And by doing that, they realized that the conservation of these species is key for them.

And therefore, they started restoring the forest, propagating the trees, and the forest is now expanding.

JENNIFER: It's such a beautiful example, the sort of virtuous cycle that you created, the connecting to the supply chain, and I think it really illustrates also the importance of, as we build these more plant dependent economies that rely on indigenous knowledge – knowledge maybe that has been lost in the kind of modern context – that the benefits of it also in your back to indigenous communities. It's very encouraging but you know a cynical person might say these efforts, while noble, aren't going to fundamentally change the dynamics of the global economy. How do you think about that problem of scale?

MAURICIO: The problem of scale, it's relevant, definitely. But there's other implementations that can be done at the required scale. Let's talk about coffee.

Most people in the planet drink coffee.

JENNIFER: I do. I do. Several cups.

MAURICIO: Me too. And coffee, unfortunately, is one of those main crops that is under threat by climate change.

JENNIFER: Yes; you've said this to me and I've said we need to make that our number one priority, right?

MAURICIO: Yes, in African countries, for instance, where there's not much elevation or range with climate change, the coffee plantations will tend to shift upward in elevation. But not having enough elevation and being available to extend these coffee plantations, that means that over time, the area of these coffee plantations will shrink and in some areas will disappear.

JENNIFER: Right, so as they go up the mountain, there's less sort of surface area, to put it simply, for them to do the growing, and so there's going to be less capacity to produce coffee. That's the fundamental problem? Because they have to grow at high elevation, these plants.

MAURICIO: Correct. In order to migrate at the same time of their niche that is shifting upward because of the increase in temperature. Of course what you said is exactly correct, that there's less area, but also, this area might not be available.

JENNIFER: Right, there's stuff happening there maybe already.

MAURICIO: Exactly. And at the speed that it requires to shift all these crops, all these plantations, might not be fast enough. And this is happening everywhere. And also, plants might not be strong enough to cope with the climate change.

Changes in rainfall patterns, for instance, more extended drought periods, et cetera, et cetera. So there's been research going on looking for relatives of coffee that could act as substitutes that are probably stronger to cope with these effects of climate.

And those are called the crop wild relatives. So which are the crop wild relatives of coffee that we could use as a substitutes. That's one of the ways in which we could address. But also I'm talking about these large scale solutions. How we can use trees, for instance, in shaded coffee plantations that can also provide a spectrum or range of benefits.

For instance, fruit trees, that we could harvest that protect the coffee plantations, by acting as buffering for those, climate events. And that can be used to provide additional sources of income for the coffee. So, this is something that is being, done in countries such as Mexico and in a smaller scale in Colombia as well. And we've been supporting in Mexico, which should be those species of trees that can be planted in these coffee plantations that are more resilient, but also that provide more benefits to the local communities.

JENNIFER: So you're sort of talking about a world where you have a global problem. So there are mechanisms by which we would address that and they would be adopted locally. How do you deal with this issue of making sure that the benefits go back to communities because when things become operationalized at scale, sometimes those considerations get lost.

MAURICIO: That's a key question, and I would say that those solutions should be co designed or co created with the communities. And obviously those benefits have to be fair.

There must be specific mechanisms, transparent mechanisms, to make sure that those benefits come back to the communities.

JENNIFER: It's a real mind shift. I mean, because I think as we think about the way business works, there's this first mover advantage. You want to get there fast, you want to capture the economic advantage, and in a way that considers more than just the economic considerations, but also the planetary, societal. The more enduring solutions require that you go a little slower.

There's such beautiful examples that you've given today of the ways that projects are happening that can give us hope that we can protect biodiversity and also contribute to the livelihoods of people, and preserve traditional knowledge.

As we zoom back in here to NYBG, you've been here about two years. It feels like you've been here longer because you've been so incredibly active. And so now, at this point in your tenure, where do you see the work going?

MAURICIO: Wow. Well, that's a big question. I think right now we are evolving very quickly. We are transitioning to think how we can best contribute with solutions to the various crises that we are facing as a society. We know that we are really transforming our planet in a negative way, through climate change, biodiversity loss, pollution, overharvesting, invasive species; and all those represent huge challenges for us.

So how can we align our science to contribute plant- and fungi-based solutions.

JENNIFER: Like the ones we've been talking about today, the sort of conservation-through-use type of approaches. It's a big charge you've got.

MAURICIO: Yes; it's a big responsibility but the role of botanical gardens have been evolving over time. So initially conservation was the main purpose, but then very quickly it became important to carry out research to understand the species that you were preserving in those gardens.

So conservation and research. But then they became institutions where you could educate the public. And then recreation when they opened to the public. And nowadays, most large botanical gardens are committed not just to conservation, research, education and recreation, but also to, support greening the spaces around the gardens in the cities. Preserving natural areas and efforts of restoration.

You would think about the gardens in the past as a place where you will bring in biodiversity. Now, many gardens are sending out that biodiversity, spreading that diversity and helping restore ecosystems.

JENNIFER: Yeah. And what a wonderful thing to be able to share that biodiversity and send it out into the world at the time when we need that more than ever. So thank you, Mauricio, so much for being here at NYBG and for all of the wonderful work that you lead with your amazing colleagues in NYBG science.

And thank you for being here on Plant People. It's been fun to talk.

MAURICIO: Thank you so much, Jennifer.

JENNIFER NARRATION: I'm Jennifer Bernstein, CEO of the New York Botanical Garden.

As we wrap up another incredible season of Plant People, I want to thank you all for joining us in this round of lively and enlightening conversations. If you leave here with nothing else, I hope it's with a better understanding of just how far-reaching the importance of plants is to ALL of our lives—and that there's still SO much more to learn.

If you're a plant person and want to give us a boost, please rate us on whatever podcast app you use, like iHeart, Spotify, or Apple Podcasts. And don't forget to follow NYBG on social media. As a special offer for first-time members, use the

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