

Mangroves for Community and Climate Project

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SPEAKERS

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D Doug Parsons 00:00

Hi everyone this is America adapts the climate change podcast Hey adapters welcome back to a truly exciting episode. In this podcast I partner with the World Wildlife Fund. We're going to learn the critical role mangrove forests play in coastal adaptation. And the work WWF is doing with their mangroves for community and climate project. You'll hear how WWF is applying its three core adaptation strategies, ecosystem based adaptation, nature friendly adaptation, and climate smart conservation. We'll dig into these strategies a lot further in the episode. This is one of those special episodes where I got to travel someplace really amazing. I went to the Yucatan in Mexico, where I got to meet and learn from mangrove experts from all over the world, Mexico, Madagascar, Colombia, Fiji, Australia and the US. They came together to share their expertise and knowledge and develop new tools to help mangroves persist in a changing climate so we can rely on their important services for climate change adaptation and mitigation into the future. Before we begin, I want to let you know about the background sounds you will hear some of the transition sounds are from our visit to the Mexican mangroves during our field trip. Yes, we were sloshing around knee deep in mangrove mud. We hope it gives you a little sense of being on the ground in Mexico with us. Okay, let's join Shaun Martin of World Wildlife Fund as we journey to Mexico and learn the value of mangroves for coastal adaptation. Hey, adapters joining me is Shaun Martin. Shaun is Vice President for adaptation and resilience at World Wildlife Fund. Hi, Shaun, welcome back to the podcast.

S Shaun Martin 01:42

Thanks, Doug. Really glad to be here.

D Doug Parsons 01:45

All right, Shaun, for those who haven't heard you on this podcast before, can you briefly give us some backaround at what you do there at WWF.

S

Shaun Martin 01:51

As you said, I'm the vice president for adaptation and resilience. And I have a small and mighty team that works with communities, the private sector, governments, humanitarian agencies to help people adapt to climate change in harmony with nature. Alright, fantastic.

D

Doug Parsons 02:08

So we're going to talk about this episode, we're gonna discuss WWF three core strategies for adaptation. Can you give us some more background on those?

S

Shaun Martin 02:15

Yeah, so Doug, you remember when we went to Kenya in 2018? fondly? Yes. Well, that turned into an episode number 80 of the America depths podcast if your listeners want to go back and check it out. But during that workshop, where people from all over the WWF network came together to really dig deep on our adaptation work, and we came up with three principles that have since turned into our core strategies for adaptation. The first one is using nature to help people adapt or ecosystem based adaptation, sometimes called nature based solutions for adaptation these days. The second strategy is what we're calling nature friendly adaptation, complementing those ecosystem based adaptation measures, with other measures that reduce or avoid harm to nature. So think of things like rainwater harvesting, or early warning systems. So they're not using ecosystem services, but they're making sure that people can adapt without harming ecosystem services. And then the third strategy is climate smart conservation, managing climate risks on ecosystems to ensure that they exist into the future so that we can rely on them for ecosystem based adaptation. So what we're doing with these strategies is building a three legged stool, you need all three strategies for adaptation to be successful. If any one of them is missing, the stool collapses, and we'll get into all of these deeper in the podcast.

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Doug Parsons 03:48

Alright, that's great. And so we're gonna be talking about the mangroves for community and climate project, which this whole episode is about, can you provide some additional info to my listeners about that project?

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Shaun Martin 03:59

Sure. So the mangrove for community and climate project received a generous grant from the Bezos Earth fund in 2020. It is not an adaptation project. It's a mangrove conservation project designed to address the climate crisis. And there's three areas of work in this project, one of which is building community and ecosystem resilience to climate change. And it's in this area of

work that we're applying the three core strategies that I just talked about. So in this episode, we'll do a deep dive on each of those three strategies and talk about how we're applying them in the mangroves are community and climate project. Okay, so

D Doug Parsons 04:34

we've got an amazing lineup of expert guests in this episode, and we're recording this after I've done all these interviews, so I can just say how fascinating these conversations were for me, but who are we going to hear from here?

S Shaun Martin 04:45

We're going to hear from a number of WWF staff in the US and in Mexico, and some scientists who are doing some important research on mangroves and adaptation. Before we get into the three strategies, we'll get an overview of the mangroves for Community and climate project from Karen Lewthwaite who is leading the project at WWF. Us and from Pilar Jacobo from WWF, Mexico. And so after we get an overview of the project from Karen and Pilar, we're going to divide the episode into three segments, each focusing on one of the three core strategies that I talked about. We'll hear from scientists and additional staff to learn more about those strategies and what we're doing to help people adapt in harmony with nature.

D Doug Parsons 05:28

All right, fantastic. Well, let's kick this off with Karen Douthwaite.

K Karen Douthwaite 05:38

I'm Karen Dewayne. I'm a director within the WWF us oceans program. I lead a body of work focused on the conservation and restoration of coastal ecosystems. And I lead the overall implementation of the mangroves for community and climate project across the four countries of Fiji, Madagascar, Colombia and Mexico.

D Doug Parsons 05:56

All right, can you give us an overview of the project, the mangroves for community

K Karen Douthwaite 05:59

and climate project is focused on strengthening the conservation and restoration and management of mangroves and for countries around the world. We're looking to have an impact across a million hectares of mangroves for climate mitigation benefits, but also climate adaptation benefits. Our project focuses on three main areas of work. The first is on strengthening the protection, management and restoration of mangroves. The second is focused on building community resilience to climate change, as well as ecological resilience to

climate change. And our third line of work is focused on finance, how do we think about more innovative finance mechanisms that will allow conservation and restoration and management of mangroves over the long term?

D Doug Parsons 06:38

Okay, I guess in that first goal of protection, restoration, carbon sequestration is a part of that.

K Karen Douthwaite 06:44

carbon sequestration is a part of that, you know, mangroves are really tremendous in terms of their carbon storage impacts. They store four to five times more carbon than tropical forests. And so they're really important. They occupy a relatively small amount of land, but have big bang for their buck. And so by conserving and restoring these mangrove areas, were able to protect not only the carbon that is currently stored in the soils, but then sequester additional carbon as as those trees are restored.

D Doug Parsons 07:13

So what is the state of the world's mangroves today?

K Karen Douthwaite 07:17

So we've lost about 50% of the world's mangroves. But there is good news, the loss rate over the last 10 years is about point zero 4%, which is great, but they are still under threat, of course, from agriculture, aquaculture clearing for coastal development. And they're really important to communities who depend on them for fuel wood and for building materials. So we are still losing mangroves, although the trends are are definitely declining in the right direction.

D Doug Parsons 07:43

Do we have a sense of historically where mangroves were like, is there some sort of ideal level of mangroves? Are there even the desire to even restore more and just where you can do that?

K Karen Douthwaite 07:55

Yeah, I mean, our best maps are only about 2025 years old, as global satellite imagery became available, we have a much better understanding of where mangroves are and where they have been, you know, their tropical trees, you find them across the tropics and more than 100 countries. So they're pretty widespread. There are lots of opportunities for restoration. And that's one of the things we're really trying to do through this project, but also through other efforts. Alright, so

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Doug Parsons 08:19

what are the biggest threats they face.

K

Karen Douthwaite 08:21

So currently, some of the biggest threats they're, they're often cleared to create fish ponds, and aquaculture. They're also cleared for coastal development, things like hotels or houses or those sorts of things. They're used by communities for their they harvest mangroves for both building materials and fuel wood, in particular situations where they might have been impacted by a large storm or hurricane communities are looking to rebuild immediately. And so a lot of times that will, they will source their wood from the mangroves to reconstruct their houses. Climate change is also is increasingly a problem, you know, changes in global precipitation, we're seeing more frequent and more damaging hurricanes and cyclones. Those are having a greater impact on mangrove ecosystems themselves. And of course, that trickles down to the communities who depend on them.

D

Doug Parsons 09:09

All right, obviously WWF prioritizes mangroves, what are you guys doing to help conserve them?

K

Karen Douthwaite 09:14

So we're working in a number of countries around the world, we're working from the local to the national level, you know, and then on the local level, we're working really closely with communities to actually strengthen their ability to inform how these mangrove areas are managed and informed their natural resource management overall, on things like monitoring things like management plans, things like what are the pieces that need to be in place for communities to be able to depend on these places over the long term? At the national and international level? We're working on linking Science to Policy, thinking about what are some of those opportunities to conserve and restore mangroves and how might those be linked to global commitments and advocate for inclusion and nationally determined contributions? other policy mechanisms that will help governments understand and commit to conserving and restoring these areas. And we're also doing a lot with science. You know, mangrove restoration is something that has been done for for decades now. But unfortunately, it's been done incorrectly in the majority of cases. And so the survival of these trees that get planted over the long term, historically has not been that high. And so we've developed a mangrove restoration and tracker tool that aiming to help to fill this data gap and help us understand what are those key steps both on the front end, when you're planning your restoration, what are the things that you need to be thinking about, but then also, on the back end, tracking the success over time, and really understanding what some of those most important factors for success are. And then finally, one area where we've been working a lot is in developing partnerships and working with other organizations who are also conserving and restoring mangroves. WWF is a founding member of the global mangrove Alliance, which is a coalition of over 30 organizations that have come together around a shared common agenda for mangrove conservation and restoration.

And so we're looking at you know, where can we collaborate on key scientific questions or are developing some of the tools that we think can have the greatest impact and changing the trajectory for mangroves?

D Doug Parsons 11:18

All right, thanks for coming on the podcast. Thank you.

P Pilar Jacobo 11:27

Pilar Jacobo, the nature based solutions coordinator for WWF, Mexico, I'm coordinating the native way solution approach for our office. And I'm also in charge of coordinating the implementation of mangrove for climate and community project, which is, in other horror of the project, or the mangroves and the coastal communities. We have different scales of the project. One is national, and another one is regional and local. So at a national level will try to promote the conservation of our mangrove cover in Mexico, and other regional level promoting the same conservation and restoration efforts. And with the local level, just working with communities that rely on mangrove ecosystem services.

D Doug Parsons 12:13

Okay, so what are some of the biggest threats facing the mangroves at these sites?

P Pilar Jacobo 12:17

Yeah, it's very different for each side in Mexico Superboy Yucatan Peninsula, the major threat isn't known planning for human development, Yucatan Peninsula, it's a very attractive place for international tourism. So the lack of urban planning could have a high risk on the mangrove in the other side and the Pacific Coast of Mexico melismas nationalists, it's more related to unregulated productive activities, more specifically, like agriculture or fishery or even livestock and agriculture.

D Doug Parsons 12:51

Okay, so how is climate change affecting these mangroves?

P Pilar Jacobo 12:56

Well, it also depends on the region like for example, here in Yucatan, what we've been seen as a major threat is using increasing temperatures and which affect the the evaporation of the water that the mangrove depends on. And if you have sight, high salinity that will affect our mangroves, also, in Yucatan Peninsula is in the path of major hurricanes of the Atlantic Ocean. So the strong winds for the hurricanes affects the composition of the mangrove forest, it also affects the hydrology of the water. So the water is the major key aspect for mangrove health.

So it will affect by the changes on the fluxes caused by hurricanes. And the other side of the coast climate change. It is more related about the changes on precipitation. So when we have high precipitation, high storms in a very short period, the water from that a watershed is coming suddenly, like over flooding in the rivers. And that also is changing the hydrology of the mangroves. And affected those that specific balance between oceans water and river waters will also affect on the health of the mangroves.

D

Doug Parsons 14:11

Okay, some people who are doing conservation don't always think that they're doing adaptation, and they don't necessarily see the overlap. So how is climate smart management different than let's say a traditional conservation plan?

P

Pilar Jacobo 14:23

Well, I will say is different, like conservation. You can fail if you if we keep doing conservation in as a business as usual. So adaptation means that you have on your mind, what are the trends like we, we cannot deny it? We're seeing changes, we're going to have more changes. So we need to start considering those changes in our traditional conservation actions. And that was that was different.

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Doug Parsons 14:51

All right. You've mentioned a few of these, but what are there any other additional challenges that you've faced implementing the plan?

P

Pilar Jacobo 14:58

Yeah, I mean, so Ever all, it's it's crazy to mention this, but it's hard for the people to identify what is because of climate change and what is not. What we've been seeing is most of the changes that we've been seeing is to climate change. But because it's they're very, like slow changes in a very long period of time. People sometimes get used to those, and they start to see it as a normal thing to happen. So that's a very important challenge and how we communicate that this is not normal. And this is something that we need to work on. The second challenge specifically is just a lot of interest on conservation, but not a lot of interest in adaptation. So we need to start combining those agenda or not combining it is maybe trying to do that at the same time. And not just talking about adaptation and conservation, you start doing those things together. And I don't think we have better impact.

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Doug Parsons 15:58

All right, final question. Do you get a chance to talk about mangroves, you know, to people out there in the public or friends and family kind of thing? Do you do get to talk about mangroves? And what are some of the challenges of doing that?

P

Pilar Jacobo 16:13

Yeah, it's a very interesting question. Because me as a biologist, like, I remember studying and my career was never mentioned, the importance of mangroves. And in Mexico, for example, is the thing that we always say like where the for country in mangrove coverage 60 Person of Lancome is covered by mangroves, Sara, and Adam. I'm still trying to understand why is an very unknown ecosystem in Mexico. I'm starting to talk about my, my family, my friends. And what I'm seeing is just a difference, like I don't know, of course, it's not because me talking to them. But I'm seeing a lot of more and more communication, on TV, on the news, even on newspapers. So I think mangroves are starting to have more recognition. And the more we talk about them more recognition that we're going to have them. And I think it's part of picking the right words to describe mangroves as how fascinating they are that there are forests that grows in the sea, floating forest, and just trying to impress them. And immediately they just go to Google and start looking about mangroves. And they were like, well, this is really what you are doing. So this is incredible.

D

Doug Parsons 17:38

Okay, one more question. If someone comes here to visit any restaurant you'd recommend for them to check out while they're in the city

P

Pilar Jacobo 17:46

in many. Oh, it's several. But yeah, I think my favorite one a theme Chaya Maya. So if you want to try very traditional dishes from Yucatan, which is very different from other parts of Mexico, I think we should go there a lot of dishes made of pork with different sauces, so highly recommended.

D

Doug Parsons 18:07

Okay, great. Thanks for joining. Thank you. All right, that was great. We heard from Karen and Pilar. Now we're going to talk about your first strategy a bit more, we're gonna use nature to help people adapt. Can you elaborate on that strategy?

S

Shaun Martin 18:22

So the this one, I think most of your listeners will recognize it's often called ecosystem based adaptation or nature based solutions for adaptation. Conservation groups say that nature provides many services for people, we call those ecosystem services. And one of those services is protection from extreme weather and other climate shocks and stresses. And what we're really doing is restoring, managing and protecting nature so that the ecosystem services that nature provides helps reduce the vulnerability of people. But to do that, well, we really need to understand both the strengths and the limitations of ecosystems and how much protection they can actually provide. In this segment, we're going to learn how mangroves reduce vulnerability for coastal communities what they're good at what they're not so good at. First, we're going to

hear from Dr. Siddharth Narayan at East Carolina University who's doing a lot of research on the value of mangroves in providing coastal protection. And then we're going to hear from Alejandra called Sada at WWF, Mexico who's going to tell us how they are using mangroves to help people adapt to climate change in the Yucatan Peninsula.

D Doug Parsons 19:28

Okay, I'm really excited to share these two next interviews, Siddharth is doing some really interesting work actually really surprising work around mangroves. And then Ali, I wanted to put a plug in for Ali. She was so helpful down in Mexico and just explained so much to me when we were on the bus and when we're at the workshop, and so she had a lot of great things to say looking forward to sharing their stories. Hey, adapters joining me is Dr. Siddharth Narayan. Sid is an assistant professor in the integrated coastal programs at EA Carolina University. I said welcome to the podcast and I know I mispronounce your last name. So can you correct me for the record?

S Siddharth Narayan 20:06

Yes, sure. It's Siddharth Narayan.

D Doug Parsons 20:09

Okay. Thank you, man. My apologies. All right. So let's jump into this. Tell us a bit about yourself and your research. And how did you become interested in mangroves?

S Siddharth Narayan 20:17

Thank you. I did my civil engineering in India for my bachelor's and I was introduced to the coast there as an elective. And then I was looking for a master's degree in coastal engineering and came across this master's degree offer in Europe by Delft in the Netherlands. And I got introduced to coastal engineering as a subject matter I fell in love with the subject. And for my master's dissertation, I was looking for something that relates engineering with ecosystems because I've always had a passion for conservation and making sure our ecosystems stay healthy. And that's where I got introduced to mangroves. Actually, for my master's dissertation, I used an engineering model to look at a mangrove island off the coast of eastern India, and the protection that it provides to the coastline and the port behind it against Tom and cyclone waves. So that was my first introduction to mangroves. And since then, I've kept coming back to it.

D Doug Parsons 21:19

Alright, I love the mangrove ecosystem. I grew up with it in Florida, so I appreciate your appreciation. Okay, so you have an interesting background, would you consider yourself first and foremost a climate adaptation professional or an engineer or a researcher?

S

Siddharth Narayan 21:33

I call myself an academic engineer by use my engineering training and tools to investigate issue issues of coastal hazards and their relationship with coastal ecosystems. So it's a little bit of a mix between the three that you mentioned a little bit. Feel like I'm an engineer researcher who focuses on adaptation issues.

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Doug Parsons 21:58

I think you hear a lot about that people getting involved in the adaptation space. Okay, so how are you collaborating with World Wildlife Fund specifically?

S

Siddharth Narayan 22:06

My collaboration with WWF is again on this issue of mangroves. And we have been discussing a project to look at the coastal protection benefits that mangroves provide to people who live in or sort of adjacent to these mangroves in different countries around the world.

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Doug Parsons 22:29

Okay, related to that, we hear a lot about how important mangroves are in protecting coastal communities from increasing climate related hazards. What kinds of hazards do mangroves provide protection from?

S

Siddharth Narayan 22:39

Mangroves generally act as barriers on the shoreline against high waves and storm surges and the flooding that occurs when you have a storm approaching a shoreline? And they also protect against high winds during a storm? So

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Doug Parsons 22:57

again, I don't know if you can speak to the broader issue of the protection or if your specific area but are there estimates of the economic value of this mangrove protection?

S

Siddharth Narayan 23:05

Yes, I was part of a study that recently came up 2019 That was recently published that looked at the Global coastal protection benefits of mangroves against storms. And we found in this study that I remember correctly, mangroves protect around 15 million people around the world every year. So we were looking at what we call annual benefits. So these are your on your

benefits where you account for multiple storms. And they also protect around \$65 billion in buildings and assets and industrial, residential and commercial property on the shoreline from flood damages during storms.

D Doug Parsons 23:50

Do you see from your own experience, I look at these economic studies and they said here's the value of this economic value. Do local communities actually use these economic estimates? Sometimes there's a disconnect. There'll be these studies saying it's this much value to it. But then when you actually having people on the ground? Do you see examples of people out there taking advantage of okay, this is actual economic value?

S Siddharth Narayan 24:13

That is an excellent question. And I think there is this disconnect. And it often you know, also has to do with the scale of the study. So for something to speak to a local community or local decision maker, that study really has to be tailored to that local context. Now, it's also for example, the similar work that I did in with salt marsh wetlands and Hurricane Sandy in the US Northeast, where there were several local decision makers and communities and agencies who reached out for data specific to their region or location because it's also true that even if you produce a global study or a large nationwide study, it's always true that the first thing that you do when we'll look at a map is to zoom in to your location and see what the values are there to the location that you call home or wherever you are. And so there is a lot of interest and in these values, and I think it sort of represents the start of a conversation. So whenever we have a large scale study, and it provides a value for a place, that becomes the starting point for a local conversation for people to say, hey, look, our area has been highlighted here. Maybe we should look into this a little bit more.

D Doug Parsons 25:31

Okay, let's do a little mangrove one on one, how do mangroves actually provide protection on talking about the root systems? Or? Or is it the trees themselves?

S Siddharth Narayan 25:41

It is both. So mangroves have a complex structure. They are trees that can actually in some parts of the world get really high. And they have, they have a complex root structure. And then they have their trunk and then they have a complex canopy as well. And all of these together provide this barrier, I would say a semi permeable barrier, essentially to the flow of water through it. And so as water flows through these trunks and these canopy, he gets slowed down and gets diverted. And that's what provides the protection benefits to whatever is behind these mangroves.

D Doug Parsons 26:23

Alright, so do you need a lot of mangroves to be effective. I guess for coastal protection, or do

Alright, so do you need a lot of mangroves to be effective, I guess for coastal protection or do do a little bit I guess the smaller forests go a long way.

S Siddharth Narayan 26:32

That depends on the context, there are situations where a small forest can go a long way. So for example, in my master's dissertation that I didn't utilize looking at the mangrove island off the coast of India, I found that a 300 meter belt of mangrove actually provided really significant benefits in terms of reducing cyclone wave heights. And this weight to benefit relationship can get a bit nonlinear and that you're most of your benefits are often provided by the first few 100 meters of mangroves. In terms of storm surges and bigger storms, you sometimes need larger weights of mangroves so say, you know extending up to a kilometer or more than that, to see some appreciable effects.

D Doug Parsons 27:24

Alright, so I find this really fascinating. Your research in Florida showed that mangroves provide better protection in some areas than others. And in fact, in some cases, mangroves may do more harm than good. That to me is it sort of goes against what most of what we've learned. Can you give us a bit more information on that?

S Siddharth Narayan 27:39

Absolutely, yes. And I think this is a really important point when we are considering ecosystems as using and managing ecosystems as natural defenses. So these mangroves act as semipermeable barriers and what they're doing is to slow down the water and divert the water so that whatever is behind them actually sees reduced water levels. Now, when that slowing down and diverting of the water happens that water has to go somewhere. And you often see an effect where the water levels in front of the mangroves are higher than they would have been if these mangroves had not been there, simply because the microbes are slowing the water down. And so that's often where you see these areas where, for example, we've built out in front of mangroves so that we're between the oncoming storm surge and we have and the mangroves behind us there you start seeing higher water levels because of the presence of mangroves and therefore you see greater damages. And I say, you know the analogy to this is when we build a levee or a seawall, we instinctively know that being out in front of that levee or that seawall is going to be more dangerous. And so we don't build out in front of a levee we don't build out in front of a seawall. And similar to that, we should be thinking very carefully about where we build in relationship to mangrove forests and equivalently salt marsh wetlands when we are planning to use and manage these as natural defenses.

D Doug Parsons 29:10

Alright, so what do you think might convince more people to sport mangrove based adaptation?

S Siddharth Narayan 29:16

I think what needs to happen is for us to have a complete understanding of what exactly are the benefits that mangroves are providing us? And importantly, what would our coastal situation and life and risk exposure look like if these mangroves were not here, if these mangroves were developed over or converted to other land use, which is lost to sea level rise? What would our lives look like? And I think having that understanding would help decisions regarding mangrove management.

D Doug Parsons 29:52

Okay, 10 or 15 years ago using ecosystem services to reduce climate vulnerability was called ecosystem based adaptation. Now people seem to be using the term nature based solutions more often do you see a difference between the two? And is the constant production of new terms causing more confusion that's getting in the way of your work.

S Siddharth Narayan 30:11

I don't see a difference between the two. But I do agree that there's almost too many terms being thrown around now. And, you know, ultimately, I think it's just good practice, we just having to define a term when we use it and say, This is what we mean. There's also often this danger of using these terms as a catch all for almost anything. And it when we lose specificity than the term itself tends to lose some important. So I just think it's important to define exactly what we mean whether we say ecosystem based adaptation or nature based solution, or actually, you know, ecosystem based management was sort of the original, what was the term that was used before ecosystem based adaptation? So it's been changing, and it's important to define exactly what we mean.

D Doug Parsons 30:58

Is there anything else you'd like to share with my listeners on the importance of mangroves and adaptation?

S Siddharth Narayan 31:03

Yes, I think that the issue of mangroves being natural and dynamic is an important one to consider as well, as we start considering nature based solutions. You know, it's different from building a seawall or a levee. It's static, it's not going anywhere, and it's going to stay there until it degrades or until we modify it. But mangroves and other ecosystems are dynamic, they respond to the environment around them, they change in form and shape. And that dynamism can be challenging when we are putting measures in place for adaptation. But it's also an opportunity at the same time because it forces us to think at a much larger scale at the landscape scale. And make sure that the landscape around these mangroves are healthy, because that is important for the survival as well.

D Doug Parsons 31:58

All right, final question. You've probably visit a lot of mangrove forests around the world. Do you have a favorite and why?

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Siddharth Narayan 32:07

I actually think my favorites so far has been the mangroves and coral reefs that I visited on holiday. So not during work in the Florida Keys at the John Pennekamp. State Park. I think the it was, there was something about it. Maybe it was just the time of the year. But it was a very special visit. And I still remember that.

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Doug Parsons 32:31

Well, I had been there it is very special. It's a great spot. I mean, I love all mangrove forests. But that's a good one. All right. Thank you so much for coming on the podcast and thank you for doing the important research that you're doing Siddharth.

S

Siddharth Narayan 32:42

Thank you, Doug. Great pleasure talking to you.

A

Alejandra Calzada 32:49

Hi, I'm Alejandra Calzada, and I'm the climate change adaptation coordinator at WWF, Mexico.

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Doug Parsons 32:56

So tell me what you do there at WWF and your role in the mangroves for community and climate project?

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Alejandra Calzada 33:02

Yeah, so I am based in the Yucatan Peninsula. And I'm here because I'm coordinating the implementation of a couple of climate adaptation projects here in the North East End of the Yucatan Peninsula. And we mostly are Yeah, overseeing the implementation of projects that are focusing on two main pillars, which are climate adaptation, and conservation and restoration of coastal ecosystems. So mainly working with coastal dunes and also mangroves, how we can work with communities to protect and restore those to reduce the risk that the population are facing to climate hazards.

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Doug Parsons 33:48

Okay, we're gonna step back just a little bit. So how do mangroves help reduce vulnerability to coastal climate hazards?

A

Alejandra Calzada 33:53

So the the main function that we are trying to support is that they are a physical barrier from coastal hazards. And when we say coastal hazards, we mean like flood from storm surge specifically, but also erosion. With climate change, sea level is rising and erosion is increasing and storm surge could potentially be higher. So mangroves really are a physical barrier, preventing infrastructure, roads, communities from flooding. So that's the main thing that we are trying to push out into the world. But there are other things that they do, you know, they support livelihoods directly and indirectly, like mainly tourism and fisheries, which are the two of the most important livelihoods here in our region.

D

Doug Parsons 34:41

Okay. You talked a bit about the value of mangroves to this area, but more broadly in Mexico, do you think the people of Mexico the government of Mexico understands the value of mangroves?

A

Alejandra Calzada 34:52

I think increasingly mangroves are being talked about so yeah, I think the term wasn't used as much maybe 15 years ago now, more and more people are maybe at least slightly knowledgeable or at least have heard the term I think there's still a lot of work to do. We still need to work with people, with governments, with companies, although the rate of degradation globally has decreased significantly, there's still change going on. And so that means that we haven't finished our work.

D

Doug Parsons 35:27

And do you get a chance to talk about mangroves when you're out there in your community friends and you just people that aren't in the space? Here? You talk about it? Are you is it something that people might roll their eyes at? Or do you get to those opportunities?

A

Alejandra Calzada 35:40

My sister actually set up a webinar for me just people like family to talk about mangroves, it was not a webinar, it was just a zoom, call that where I taught my close family about the basics of mangroves. And she us keeps insisting that I should do that with a broader group of people, just friends who have never heard the term or like, I haven't really done that, but I will.

D

Doug Parsons 36:05

Oh, I love this idea and any interesting questions from family members. They're like we finally know what you do kind of thing. They don't really know. Okay, Shaun, we're back. So it was

really interesting to hear from Siddharth. Usually we think of mangroves only in a positive way of protecting places. But the notion that there are limits to this coastal protection, I thought was really fascinating. And it definitely gives planners more tools when you're thinking about coastal adaptation. So what did you think about that aspect of what he had to say?

S

Shaun Martin 36:40

I think his research is really spot on. We need this kind of information to get past the silver bullet approach we're taking to ecosystem based adaptation that if we have nature, everything's gonna be alright. And Siddharth provided a lot of insights that I think is a good segue into this next segment.

D

Doug Parsons 36:59

All right, let's go to the next strategy. And this one isn't as intuitive as the first one. Right?

S

Shaun Martin 37:05

It's not just to remind your audience the second strategy is to use complementary measures that avoid or reduce harm to nature. So we often talk about nature providing ecosystem services like protection against coastal storms, you know, mangroves can do that. But nature can't do everything for people. There are gaps. Mangroves protect against storm surge and flooding, but they don't tell people when a storm is coming. They don't provide water when there's a drought. And so people need more than just nature. We need to understand the limits of ecosystem based approaches, and then fill in the gaps with other measures. Now what we find is when we talk to people that if people aren't prepared for a storm or a flood or a drought to cope with those hazards, often what they're doing is responding by degrading nature. And that's undermining our first strategy.

D

Doug Parsons 38:02

Okay, Shawn, in this next segment, we're going to hear how WWF is applying this strategy in the mangroves for community and climate project. So who are we going to hear from?



38:11

Right, so we're going to hear from two people. First, we hear from Luz Cervantes, she works on our environment and Disaster Management Program. And she's going to talk about her work with our team in Madagascar. And then we'll head back to Mexico where Claudia Duran will talk to us about what she's learning directly from communities by applying our climate crowd methodology.

D

Doug Parsons 38:32

Alright, I think people are gonna find this really interesting. And I didn't get a chance to really

Alright, I think people are gonna find this really interesting. And I didn't get a chance to really talk to too many people on the ground out in the field. And so talking to Claudia about climate crowd was really interesting to me, but can you give us a bit more information about climate crowd?

 38:46

Sure. So climate crowd is one of the programs that my team leads, you had Nikhil Advani as a guest on your podcast long time ago, he leads the climate crowd program. And this is really a community engagement method with climate crowd, we go out into the community and talk to people to learn which climate shocks and stresses are having the greatest impact on their lives and livelihoods. And then we're trying to find out how are they responding to those hazards? And then do their responses have any adverse effects on nature. So then after we speak to enough people in an area like the Yucatan, for example, we analyze all that information to look for trends. And then we present this information back to the communities to help them identify adaptation solutions that not only improve their lives, but also reduce pressure on nature. And then we provide resources to implement those solutions. So that's climate crowd.

 Doug Parsons 39:41

All right, so we're gonna hear from Lucy and Claudia and Shawn, you're going to come back right after that.

 Shaun Martin 39:45

All right. Talk to you soon.

 Doug Parsons 39:51

Hey, adapters. Joining me is Luz Cervantes. Luz is the Senior Program Officer in the environment and Disaster Management Program at World Wildlife Fund. How Luz, welcome to the podcast.

 Luz Cervantes 40:01

Hi, Doug, thank you so much for inviting me.

 Doug Parsons 40:04

Well, thanks for joining. So tell us a bit about yourself and some of the work that you're doing there at WWF.

 Luz Cervantes 40:09

Yes, so I am a part of the environmental disaster management program. So we sit within the climate adaptation team at WWF. Us. And what we do is basically, we work to integrate environmental considerations into disaster risk reduction and recovery programs. So we really are supporting people to understand the connections between environment and disaster work, and understand how nature can play a role in community wellbeing and resilience to extreme events.

D

Doug Parsons 40:38

Okay, great. So we have already learned from other guests in this episode about how mangroves can help reduce risk to coastal flooding and storm surge. So have the communities you are working with in the mangroves for community and climate project experienced these actual hazards?

L

Luz Cervantes 40:52

Yes, they have. So the project locations are all in coastal areas. So the countries face multiple hazards. But in the project areas. One common issue is cyclones, and associated flooding and storm surge. So actually, just this week, Madagascar has suffered from the impacts of a cyclone GNSO. And it has affected both Eastern and Western coasts of the country with heavy rain flooding, heavily impacted also the project locations. There are also other hazards that are affecting these countries in the project locations, for example, earthquake, landslides, erosion, and flooding. And we learned that strong winds are also a big problem for local communities.

D

Doug Parsons 41:36

All right, so what happens to mangroves following a disaster?

L

Luz Cervantes 41:39

So that's a great question, because we don't often think as disasters affecting the environment, but they affect more than just people. And so disasters really, also are a cause of degradation in terms of the ecosystems and the nature that we are trying to protect. So the mangroves will be affected directly by the Cyclones themselves. But also something that we don't often think about is how the communities that are living in those areas may also turn to activities that will actually affect the mangroves as well. So for example, if there is a cyclone in an area, the communities may need to rebuild, and then they may need to turn to cut mangrove trees in order to rebuild. So that is one direct impact that we see from the cyclones and mangrove areas. And in that sense, that's why also, as an environmental conservation organization, we need to look into disaster work as well.

D

Doug Parsons 42:37

All right, you had mentioned other risks that these coastal communities face. Are there other hazards and risks that these communities face where mangroves might not actually provide

adequate protection?

L

Luz Cervantes 42:48

Yes, so basically, in all of these cases, mangroves is just one piece of the puzzle. So we really need to think about building the capacity for green disaster risk reduction and reconstruction, aside from the mangrove conservation, and that's what our team focuses on. So really complementing the conservation of mangroves, with this mainstreaming of environmentally friendly practices for disaster risk management and reconstruction.

D

Doug Parsons 43:18

All right, maybe give me a bit more detail there. So what are you doing to help these communities beyond protecting restoring the mangroves? So I think you were alluding to that, but what are some of the specific items?

L

Luz Cervantes 43:26

Yeah, so what we do and what we are working very closely with the country offices for everything that we do within this project, is we are training on tools and approaches that make those connections between disaster risk reduction and environmental issues. So one specific example is we work closely with the WPF Madagascar office last year, to organize two trainings and the two landscapes where the project is being implemented. So one in the northern area, and one in the western coastline of Madagascar. And in these trainings, we covered key concepts and tools like our green recovery and reconstruction toolkit and the flood green guide, which focuses on natural and nature based flood management. So in that training, we had participants from the WF Madagascar staff, but also participants from other NGOs, community based organizations on the ground and governmental institutions that are managing disaster risk. So beyond that capacity building, we are also helping the Madagascar WB F office, as they are establishing partnerships and connections with disasterous management agencies so that we really have a solid foundation for green recovery, reconstruction and risk reduction practices to be mainstreamed.

D

Doug Parsons 44:48

Right. All right. So what is surprise you in your work on this project?

L

Luz Cervantes 44:53

And so I think one big surprise and I'm maybe already mentioned that was the issue with strong winds that Some of these local communities are experiencing and making fishing activities difficult. And so they are really causing livelihood challenges, because it is getting more and more difficult to go out to fish and more and more dangerous to do so. So that is a hazard that

we hadn't heard as much. And I think one of the hazards that people maybe don't think about as much, but it is really creating a lot of challenges for them and pushing them to maybe have to find alternative livelihood activities.

D Doug Parsons 45:31

Alright, last question. You've probably visited many mangrove forests from around the world. Do you have any favorites?

L Luz Cervantes 45:38

Um, I think they're all different. But I have visited some in Galapagos, which are very beautiful. I'm actually originally from Ecuador. So I think maybe that could be one of my favorites.

D Doug Parsons 45:51

Are you going with the home team? That's That's understandable. Yeah. All right. Thank you so much for what you're doing. And thanks for coming on the podcast. Thank you so much.

C Claudia Duran 46:06

I'm Claudia Duran, field officer, Yucatan, Mexico.

D Doug Parsons 46:10

So what is climate crowd?

C Claudia Duran 46:13

But it's a survey a composing couple questions. There are five questions to open survey that we do in the communities to know how climate change affects natural resources and how they people adapt to climate change.

D Doug Parsons 46:29

Alright, let's hear a bit about what you've been hearing from these committees. So what are some of the general themes that you're hearing the feedback?

C Claudia Duran 46:36

Well, because these communities are fishing communities, the responses we are having are very related to their fishing activities. For example, their weather has changed a lot. They used

to be very consistent in the but in the recent years, the storms on the cold fronts and dry seasons, I've been changing a lot, and that affects fisheries. And also they are more exposed to storms when they do their activities, and those kinds of things.

D Doug Parsons 47:05

What did the communities say the biggest changes in climate are and how are they affecting their lives?

C Claudia Duran 47:11

Well, they depend a lot in the, in the rains, because of the that affects the fishing activities, and they say they cannot go fishing and anymore for long periods of times. And also, they are not very sure if it's because of climate change, or because of our exploitation, but fisheries have decreased a lot. And so they have to go further away to fish and they are more exposed to storms during that.

D Doug Parsons 47:39

Does the issue of climate change come up though, in your survey work? Or are you talking about those bigger issues? Do they even mention it?

C Claudia Duran 47:48

Well, yes, they they mentioned the climate has changed and the conference are more longer. But when I asked about climate change, they now know about it. So they know, some changes have happened in recent years, but they don't know what what's the reason.

D Doug Parsons 48:06

Okay, so how are people responding to these climate changes?

C Claudia Duran 48:10

Well, they are different adaptations, like when they cannot go fishing, they rely on tourism, but sometimes that that's also affected because of climate change. So other things like illegal would harvest, and they do illegal hunting sometimes. And also the population is growing, and they don't have more spaces to build more houses. And they, sometimes they could, the mangroves to build more houses, and those are the the spaces they get more flooded. So one thing they're doing is people who have the economic resources, build a second floor in the house because they first won't get flooded. And also they will house inland. Or if they can't do that they rely on family who lives elsewhere, and they move during the storms.

D Doug Parsons 49:07

So when you talk the public, in my own experience, talk to in public, there's always some surprises that you know, you can't really predict because they have a lot of interesting, interesting perspectives. Any surprises when you were doing this survey work?

C Claudia Duran 49:19

Yes, we didn't know they have. Yeah. Hi was Tina booth A. We didn't know that. It was a big issue. But it is it happens when they cannot go fishing. They could the mangrove trees to do charcoal and to sell them there. It's one of the ways to adapt is another affectation to mangroves.

D Doug Parsons 49:39

Will mangroves have a role to play in helping these communities adapt to climate change?

C Claudia Duran 49:43

Yes, of course, because mangroves are the protection for the hurricanes and it's one of the the biggest threat to these communities and also in recent years have been a lot of storms, long storms and they get flooded. So Though they are very dependent in the natural services mangroves give them.

D Doug Parsons 50:05

Okay, so not just the mangroves, but what else will these communities need to adapt to climate change?

C Claudia Duran 50:12

Well, many strategies, for example, when they need to plan the fi way more for the storms, and also weather planning for the infrastructure of their communities, and we are looking for strategies for them to adapt.

D Doug Parsons 50:28

So I went through some of the responses on the survey, there's been interesting, interesting answers. And I thought it was an interesting meet potential adaptation they can do is one of the communities as something else for tourism is the there's a cenote in the area, and people are overusing it and they'd like to open up another cenote. And in my head, I thought, oh, opening another cenote could be a climate adaptation, because it's still alleviating this coastal pressure. So what's the story there?

C Claudia Duran 50:54

Yes, because tourism is growing in recent years, there is a lot of people go into one of these and notice, but there are also a group of people who wants to open new ones, there is one who is a very, a beautiful and likely to be open. But there is also another part of the community who doesn't want that, because they say, the senator is going to be very affected because of the people. So the there is there's making conflict in the community now.

D Doug Parsons 51:24

So potentially could be a mal adaptation to open up that extra Somoto.

C Claudia Duran 51:28

Yes, it could be a maladaptation. So we we are we are analyzing now.

D Doug Parsons 51:33

So what happens now you've done the survey work? What are you going to do with this information?

C Claudia Duran 51:38

Well, we're gonna use this information to clarify another adaptation measures or to know better how we can work with these communities.

D Doug Parsons 51:48

And will you do another survey and time to determine and maybe their answers will change?

C Claudia Duran 51:53

Yes. The first or the first time they we did the surveys. It was two years ago, then. Now I'm doing it again. And in the future we're doing we'll do it again to see the changes.

D Doug Parsons 52:07

Alright, thank you so much. Thank you. Okay, Shaun, are there any takeaway messages from the segment we just listened to?



52:18

Yeah, Doug. Thanks. First of all, I hope that your audience learned a little bit about the important contributions our environment and Disaster Management Program and the climate crowd program are making to this mangrove and community and climate project, particularly on applying the second strategy, nature friendly adaptation. And then I guess the takeaway is really about the importance of local knowledge and talking to people to understand how climate change is affecting their lives, talking to people, we learned a lot of things. So I said at the beginning of this segment, that what we're finding in communities is that when people aren't prepared for climate shocks and stresses, they turn to activities that are degrading nature, like cutting mangroves, both Luce and Claudia mentioned how stronger winds are preventing people from going out and fishing. We learned that in both Madagascar and in Mexico, we didn't really know that until we went out into the communities and spoke to people. And what Claudia discovered that when people can't go out fishing, they need other sources of income. So what they're doing, they're cutting down mangroves to make charcoal as a second source of income. And then you mentioned you know, the community wants to open up a new sand notae to supplement their income due to loss of fishing. And we're concerned that could do damage to the environment there. So we really need to find alternatives for people that improve their livelihoods supplement lost income when they can't go fishing, but in ways that are not damaging the environment. So what can they do besides cut mangroves to make charcoal? If they have to open this scenario type for ecotourism? Can we do that in a way that's environmentally responsible and minimizing the impact on nature in the area?



Doug Parsons 54:02

Well, it was interesting talking to both Luz and Claudia, I just find it fascinating that you guys at WWF have this environment in disaster management program. I've worked with the need of in Breda before and she's part of that program. And it's, I think, really ambitious of you guys to even have a program dedicated to that. And then to Claudia's work with climate crowd. It is not easy talking to people out in the public, you think it would be, but just getting consistent information, useful information, and she really did. So I think that's a useful tool that not everyone gets, right. Okay, Shaun, let's talk about the third strategy, helping nature adapt to climate change. And you're gonna explain how the Mexico workshop that I got to attend fits right into this third strategy. Right.



Shaun Martin 54:42

Right. So this strategy I sometimes think that conservationists aren't paying enough attention to we're focused on strategy one restoring nature to provide ecosystem services. But we often forget that ecosystem services are themselves at risk to climate change. If we want to rely on them in the future, we have to manage those risks on ecosystems. So many of the guests we already heard from Karen Pilar Luce talked about how climate change, especially cyclones, strong storms are directly affecting mangroves. Other things affect mangroves, like the availability of freshwater. And then Sid reminded us that we have to consider that mangrove ecosystems are dynamic, and that we have to understand how they respond to climate change if we're going to rely on them for climate change, adaptation, and climate change mitigation and for livelihoods. So with this strategy, climate smart conservation, we're really trying to understand the risk to mangroves, and what we can do to best ensure their survival as the climate continues to change. Where should we restore them? What species should we use?

How much space do they need to migrate inland with sea level rise? So as you said, Doug, you attended the workshop in Mexico last October, and I'm so jealous I didn't get to go. at that workshop. We brought together people from all four countries participating in the mangroves for community and climate project, as well as our academic and local partners to work on a climate smart planning tool for conservation. And in this segment, we're gonna hear from Nicole Cheb Renee, she works at WWF us, and she's been coordinating the development of this tool, and then from Dr. Catherine Lovelock, at the University of Queensland. And she's going to talk about her research on how mangroves respond to climate change. And then we'll hear from a few other participants in the workshop to hear their thoughts on the tool and what they've learned.

D

Doug Parsons 56:35

All right, let's hear from Nicole and Catherine. Hey, adapters Joining me is Nicole Chabaneix, a of World Wildlife Fund. Hi, Nicole, welcome to the podcast. Hi, Doc.

N

Nicole Chabaneix 56:47

Great to be here.

D

Doug Parsons 56:49

All right, let's get started. We're gonna talk about mangroves. But tell us a little bit about yourself, your role there at World Wildlife Fund?

N

Nicole Chabaneix 56:56

Sure. I'm a senior program officer in the climate adaptation and resilience team. And I focus particularly on climate risk management and everything around climate smart conservation.

D

Doug Parsons 57:08

Excellent. Okay, so let's talk about your role in the mangroves for community and climate project. What do you do there,

N

Nicole Chabaneix 57:14

I am coordinating the climate smart component. So basically, we are creating a new tool. So the tool which we have a working title for it, and it's a mouthful, it's a climate smart member of conservation decision support tool. And just like the with the tools name suggests its purpose is to provide guidance on how to explicitly consider and address climate change risk in mangrove conservation. So the teams are working through the tool first by implementing a vulnerability assessment based on site specific characteristics and climate exposures. So that means the

climate hazards that are unique to that site. And then going through the steps helps them incorporate that knowledge or that information before selecting management actions that they can do to reduce that site specific vulnerability of the mangrove.

D Doug Parsons 58:07

Alright, a lot of people don't even understand how these tools are created. So can you give a little bit of that history? So how was that tool actually developed?

N Nicole Chabaneix 58:14

It was developed in a very participatory and collaborative approach. So we as you know, we are five different WWF teams working on this single project. And from the very beginning, we wanted to have everyone engaged and come together, we understand that, you know, the value of a tool really comes from having people engaged from the very onset of what we want the tools purpose to be, how do we want it to, you know, be structured, and what is the outcomes that we're seeking to achieve through the tools implementation. So from the very beginning, we've had a process of doing literature review with our partners at the University of Queensland, developing the structure of the tool, and then we've been doing trial runs of the tool. And you participated actually in the field testing portion of trialing this tool in Mexico. And we had members of the Madagascar, Colombia, Fiji, and Mexico teams join us in Merida, we wanted to really make sure we we had the field component where we collectively gathered and information on the site, and also got that perspective before we went into a workshop setting and try to run through the tool with that information.

D Doug Parsons 59:28

Okay, so how long total has it taken to develop the tool?

N Nicole Chabaneix 59:32

So the tool is development started with the planning, which happened at the end of 2021. And then since mid 2022, we've been working with the field teams, so with monthly meetings to review the content of the tool. And then also, you know, the field testing, which happened in October, and since then, we've had trial runs with the application as a tool to four different sites in each country.

D Doug Parsons 1:00:00

All right, so you had mentioned the workshop in Mexico, which was a fantastic event. It was great to be there with you guys. Can you elaborate more on that, like, who showed up for that? Who was participating?

N Nicole Chabaneix 1:00:11



NICOLE CHABANEIX 1:00:11

So we invited representatives from each of the WWF teams. And we since it was hosted in Mexico, we invited local partners, which were based in medida, as well as our academic partners, which include University of Queensland, Griffith University, and of course, the America ducks podcast.



Doug Parsons 1:00:30

All right, yes, thank you for letting me participate in that. So you've been in the thick of this tool for a while, and you know all about and you probably have just your own perceptions of it. What was it like being there in Mexico and seeing these other people that even though they know generally that the what the tool is about just working with it, getting to see it firsthand and testing it out? In the sense of being at the workshop? What was it like for you to kind of see that?



Nicole Chabaneix 1:00:52

Well, it was definitely a reminder that we really do our best work when we come together as a team. And our organization is international, and the value of having team members and colleagues from different countries come and you know, show their experience working already on mangroves, all of us having dialogue and discussing how to best create a product that can be, you know, user friendly, practical, and that in the end will generate the results that we want as part of this project to increase the resilience of both the mangrove ecosystem and the communities that are involved. So for me, it was an amazing experience to meet my colleagues, which so far I have only met through zoom, and to meet yourself, because we have been discussing a lot through email before we met in person, and just having the time to visit the field, you know, so visiting those mangrove sites, that was really fun. I'm sure you enjoyed it, too. I remember we even got some craps on on people's legs, and we got to tread through very thick mangrove before we got to a very degraded site. So it was really an amazing experience.



Doug Parsons 1:01:58

Yes, it was fantastic. And I would hope too, that so much work is done inside the office. And you know, the the tool, you guys got to go out in the field, I was there just witnessing it. But for you guys to kind of go out there and then come back and kind of look at the tool from seeing that real world. It must have been really useful and really, I guess, productive process for you.



Nicole Chabaneix 1:02:17

Yes, it really was amazing. You know, you can never substitute the importance of being out in the sites where you're actually going to be working and applying the tool.



Catherine Lovelock 1:02:31

My name is Catherine Lovelock. I'm Professor at the School of Biological Sciences at the

My name is Catherine Lovelock. I'm Professor at the School of Biological Sciences at the University of Queensland.

D Doug Parsons 1:02:39

Can you give us some of the background on the research that you do?

C Catherine Lovelock 1:02:43

I am really interested in how mangroves and other coastal wetlands and I other coastal wetlands, I mean, sea grasses, salt marshes, and actually super tidal forests and other ecosystems as well and how they respond to climate change. Then I'm also interested in their role in helping us adapt to climate change.

D Doug Parsons 1:03:09

Okay, so really briefly, but give us a little bit of history. How did you get involved with this type of research?

C Catherine Lovelock 1:03:15

I've always worked on mangroves since my PhD. And I used to work on the Eco physiology. So how the plants acquire carbon dioxide, how they grow, what stimulates their growth. And over time, of course, that became really important for understanding the role of these ecosystems in carbon sequestration. And, I mean, I've had quite a long career by this stage and have worked on climate change issues in a range of different ecosystems. So it's just sort of a natural progression, really to be focusing on these two, two elements right now.

D Doug Parsons 1:03:59

Okay, so you've been involved with mangrove research for a long time. And climate change seems to be it's accelerating people's interest in it. And we've heard quite a bit but I want to hear from you are how are mangroves vulnerable to climate change.

C Catherine Lovelock 1:04:12

So mangroves are vulnerable to climate change, because they really mark the the boundary between land and sea. So their distribution is absolutely tied to sea level. So that means of course, as sea level changes that they are likely to be affected. I mean, in addition to that, their higher plants they acquire CO₂ from the atmosphere, so of course, they're directly influenced by increases in elevated CO₂. And then they're also really sensitive to the availability of fresh water. I mean, everybody sees that mangroves sit in salt water, but their growth and

productivity is really linked to the freshwater that arrives at the coasts as well in many places. So when that is changing, either due to increased precipitation or decreased precipitation, then of course, they are likely to change and respond to those pressures.

D

Doug Parsons 1:05:13

Okay, so you had mentioned things like salinity, when you're talking about mangrove forests, it's not complicated. So we're storing a mangrove forest. Can you give us more of that background and why it's more complicated than people think of just oh, we're just gonna restore in their native habitat.

C

Catherine Lovelock 1:05:27

Mangroves are really sensitive to the inundation regimes. And sometimes they are hard to sort of understand when you just standing there because of course, the, the, the level of the tide changes throughout the month, throughout the year. You know, and, and people sort of think that mangroves are they just grow in salt water, so we just plant them where there's water, but the truth is that they actually need quite a limited amount of inundation to establish if it's too deep, basically, they drown. So you really have to know about the biology of mangroves to get, you know, restoring them. Correct. Otherwise, you're gonna have failure. And that's happened in a lot of places because people have been focused on planting millions of propagules, which are the seedlings of some of the mangrove species that you can just push in the ground. And often they are planting them in locations where the water is too deep.

D

Doug Parsons 1:06:24

Is the conservation community doing enough to integrate climate risk into mangrove conservation sort of building upon the notion of conservation maybe being a bit different than adaptation?

C

Catherine Lovelock 1:06:33

I think people are broadly aware that climate change is a risk, you know, it's really an emerging threat that people are starting to see the influence of climate change on their mangrove ecosystems. So I think there's been broad awareness, but probably not enough attention. And, you know, researchers have been talking about this for a long while, right. But sometimes the uptake of research into policy and strategies on the ground can be, you know, relatively slow. So one of the big things for mangrove survival into the, you know, over the next century, is really leaving room on the landward side for them to migrate. Right. So if you build a wall, if you build a levee, of course, that's going to interrupt that potential to move backwards as sea levels rise. And that is one of the biggest issues for coastal wetlands for salt marshes as well. You know, if there's no land left on the landscape for them, as sea levels rise, then we can expect that they will, you know, their distribution, their area will decline over time. So it's sort of critical for conservation, that if you have a standing mangrove that you actually leave some space at the back for them to move into. Now, that is not going to be easy. And it could be controversial, because sometimes they are going to migrate into areas of high biodiversity that

we really love as well. So freshwater wetlands connected freshwater wetlands, I think there has to be kind of a whole lot more thought put into the changes that might occur. And then, you know, preparing people and communities for those changes.

D

Doug Parsons 1:08:22

What are some of the gaps in mangrove research?

C

Catherine Lovelock 1:08:25

mangroves, we have a very lively mangrove research community that is for sure. So globally, we know that mangroves are going to be influenced by sea level rise. And regionally we kind of know that too. But actually, the debt the devil is in the detail. And on a site by site basis, I think there hasn't been really enough work to understand, you know, the, the influence of climate change on mangroves, because the influence of climate change is variable over sites, right. So there's a lot of that variation that we really know, we really need to still, you know, get a handle on. I think there's not enough research on that change, the likely change that's going to occur, and what the implications are. And then I also think there's really not enough research to understand the role of mangroves at any particular place. Or in coastal protection in that adaptation function. We sort of got a broad handle on it. But what if, at any particular site is really hard to say? One thing that's really interesting is things like what although we know about waves in the open ocean, waves on the coast, you know, there's really no great off the shelf product that anybody could look at. And when you say okay, the interaction of storm surges with mangroves. Then again, we've got a very sort of broad picture of how that might happen. But it's not very clear for a lot of situations.

D

Doug Parsons 1:10:07

What's your advice for conservation groups like World Wildlife Fund when it comes to mangrove adaptation, mangrove conservation?

C

Catherine Lovelock 1:10:14

My advice generally is that if you're concerned with those things, then great. The non government organizations like WWF, have been doing a fantastic job in the mangrove space. I mean, in the early in the 80s, mangroves were being lost at like 2% per year, you know, huge, huge levels of deforestation globally. And that has been turned around, you know, now we're down at, it's still negative. But man, it's so is closer to point 2% loss rather than 2%. And I think the NGO communities have been extremely influential in, in reversing that loss, those global losses, you know, they've been really, really important. So more power to the, you know, the WWF and other NGOs of the world, I'd say, you know, you have to really keep on on the message, I think, looking at climate change very, very clearly as a negative but also possibly the opportunities as we go forward. So the opportunities for expansion of mangrove habitat with sea level rise is a is an important thing to focus on.

D Doug Parsons 1:11:26
All right, last question for you. For my listeners. Is there a favorite spot in Australia to visit a mangroves forest that you could recommend?

C Catherine Lovelock 1:11:34
Everybody loves the Daintree, so the Daintree rivers in the very small pocket of wet tropics of Australia, but they're, the mangroves are huge, and well, you know that they're reaching 30 meters. It's adjacent to the rainforests. So if you go walking on the mangrove boardwalks there, you may spot a cassowary. And, of course, you will see lots and lots of very large crocodiles, which are a feature of the Daintree.

D Doug Parsons 1:12:06
I thought you were gonna say no Nudgee Beach.

C Catherine Lovelock 1:12:09
Nope. Well, now she's beautiful. But the danger is probably everybody's all time favorite.

D Doug Parsons 1:12:17
Understood. Well, thanks for coming on the podcast. Thank you.

J Jemma Purandare 1:12:26
Jemma Purandare, environmental scientists with the University of Queensland.

D Doug Parsons 1:12:29
Okay, Gemma, where are we headed? Right now,

J Jemma Purandare 1:12:31
we're headed an hour and a half north of Maratha to the coast where we've got three mangrove sites that we're going to be visiting.

D Doug Parsons 1:12:39
Okay, so what are we gonna do at each of those sites.

J Jemma Purandare 1:12:41

So yesterday, we split the room into four different groups, and each group was looking at a different site and a different scenario. So we're gonna go to each site as a whole group, and start looking at some of the mangrove conditions, getting a bit of a situational awareness, bit of a feel for like, what the mangroves actually like in the flesh. Looking at the condition of some of the trees, the grounds, the topography, water quality, that kind of thing, so that we can start feeding that into the how we actually work through the tool and process the tool.

D Doug Parsons 1:13:16

Alright, so in theory that the tool is going to help us manage these three different sites in the future, they decide to do that.

J Jemma Purandare 1:13:23

Yeah. So the idea of the tool is to make sure that when we're planning, conservation, restoration and management works at sites like this, that we're making decisions that are climate change, adaptive and climate smart. So that's things like making sure that we're putting effort into the right places that they, if we're going to do restoration, restoration is going to be resilient impacts of climate change, like sea level rise or changes in salinity.

D Doug Parsons 1:13:51

Do you know anything about these particular mangroves, what kind of ecosystem This is nice.

I Ixchel Lopez 1:14:05

My name is Ixchel Lopez, and I am the leader of the oceans program in WWF. Mexico. We're going to visit a site here in Merida that where we can find mangrove

D Doug Parsons 1:14:20

any expectations of what we're gonna see. Well, I know that

I Ixchel Lopez 1:14:23

we are going to see both a mangrove that is in real good state but also we're going to see some places that are tech related. So we are going to see a lot of diversity in there and we are going to learn a lot

D Doug Parsons 1:14:43

D Doug Parsons 1:14:43
any chance that we might see some wildlife

I Ixchel Lopez 1:14:46
Yes, of course I think that we might see at least some birds.

D Doug Parsons 1:14:52
Is there any chance we are gonna get bit by mosquitoes?

I Ixchel Lopez 1:14:55
Yes, we are going to be at them by mosquitoes. So we we are you using the proper clothes to avoid that.

R Ryan Bartlett 1:15:08
Ryan Bartlett, Director of climate risk management and resilience at WPF. Us. So our challenge today is to figure out if what we've designed so far based on a desktop and some practical experience from the team, but mostly through zoom calls and remote work. If these real sight base conditions can actually be filtered through this tool to help really guide the next steps in the conservation work, the adaptation and resilience work on the ground.

D Doug Parsons 1:15:36
So could these sites actually be you know, restored at a future date? Or those kind of sites?

R Ryan Bartlett 1:15:42
Yes, yes, that's, that's the objective. These are, these are real places that are going to see real increase investment in restoration in the coming years.

D Doug Parsons 1:15:51
All right, describe exactly what we're gonna kind of do out there. How are we getting around,

R Ryan Bartlett 1:15:55
we're, we've got some boats, we're also gonna be tromping around getting our feet wet. It's literally muddy boots conservation, which is a phrase we use in our work, but we don't actually get to experience that often. So this is one of those rare cases, at least for me, you know,

based in the US, this is getting out into the field. And so we'll Yeah, we'll take some boats and visit the sites and actually literally get our feet wet and trudge through some mud.

D Doug Parsons 1:16:18

Alright, we were told about the mod and we're supposed to wear some boots, any nervousness that you're wearing TiVos

R Ryan Bartlett 1:16:23

I'm not nervous. I'm not this is not my first rodeo. I think I'll be okay.

J Jaime Villareal, 1:16:27

I am Jaime Villareal, climate change adaptation officer WWF. Mexico.

D Doug Parsons 1:16:38

Okay, so you've been in the thick of this climate smart decision support tool, you've been here in the workshop doing a lot of things. How do you think is going?

J Jaime Villareal, 1:16:46

Well, the feedback that we're having into the climate smart adaptation tool is very important, because we have been in the field, we have acknowledged the information gaps, and we have reached out to the possible ways to go around them and to have a better decision making tool.

D Doug Parsons 1:17:07

Okay, so there's people here from other countries, Madagascar, Fiji, Colombia, what do you been hearing from them? How do you think they've been responding to the tool?

J Jaime Villareal, 1:17:16

It's been a great participation from every one of them. Like from Fiji, they were telling us how the government is related to the mangrove forests, and what they are able to do in them and what communities do. And with Columbia, they were telling us about how they have this river mangrove forests associated to upstream and downstream effects of what is happening with other forests in the south, or in the north of the various

D Doug Parsons 1:17:45

Okay, so the first day, we were looking at the decision support tool, and there was a lot of guesswork on salinity and sedimentation. But then we had the ability to go out and do a field trip, how did that affect your ability to fill in that support tool?

J Jaime Villareal, 1:18:00

Well, having local knowledge and experts telling us all the history of the place, the changes, they have noticed over time, they have like, in some places, 20 years, or five or 10 years of experience working there. It's a lot of information, that is not simple to get into the tool. But it's really important to know it. So a lot of information may not be considered immediately, because you're not available everywhere. But in this case, this information, particularly is very, very important for us.

D Doug Parsons 1:18:32

So did you feel a lot more confident coming back into the office and working on the tool after having gone in that field trip?

J Jaime Villareal, 1:18:39

Yes. Yes, it field trip really filled some gaps, and raise some issues that we need to consider to apply to.

D Doug Parsons 1:18:48

Okay, and so in the last couple of days, what has stood out for you, as you've been talking about the tool, like heading out? Are people prepared to use it?

J Jaime Villareal, 1:18:55

Well, with the feedback we have noticed, like some information is not so clear, so we need to figure it out. But some information is really quite explicit. So we can use it as it is. In this case, the tool is being improved as we work through it. And as we went to the field.

D Doug Parsons 1:19:14

So adapting mangroves to climate change can be quite complex. And of course, the tool talks about that, but can you give us some examples of why it's so complex?

J Jaime Villareal, 1:19:24

Well, let's say we're not adapting mangroves. Let's say we are enabling conditions so mangroves will be helping us to tackle climate change. In this case, the tool will help us to

mangroves will be helping us to tackle climate change. In this case, the tool will help us to acknowledge these key components that we need to address to fulfill the idea that okay, we need to keep them and how do we keep them to get us back on track to tackle climate change and protect communities?

D Doug Parsons 1:19:49

Okay, final question. Do you have a favorite mangrove spot here in Mexico?

J Jaime Villareal, 1:19:55

I have been only here in Yucatan and in Sonora. And they're both awesome. They're both great. They are different kinds of them. We you have tone mangroves, you have short mangroves. So it's amazing. All of them are amazing.

D Doug Parsons 1:20:11

Thanks for coming on the podcast. Thanks. So

J Jaime Villareal, 1:20:12

you haven't I said

D Doug Parsons 1:20:13

Hi Adapters,, we're back with Nicole Chabaneix of WWF. And we're going to just get a bit more information on the workshop and the decision support tool. Okay, so we heard from scientists in this episode and WWF staff who attended the workshop in Mexico, what has happened since then,

N Nicole Chabaneix 1:20:35

since the workshop, we've continued to meet online, which of course, is not the same as being in person in one room. But we've continued to improve the tool, it's actually very much evolved, given the feedback that we've received in Mexico. And we have developed more of a precise step by step process for assessing climate risk and selecting the appropriate management interventions that we want to implement on the specific sites that were selected for each country.

D Doug Parsons 1:21:04

Okay, so I think you're you're sort of explained this somewhat, but what did you learn from the teams as they applied the tool in their own countries?

N

Nicole Chabaneix 1:21:11

Well, we learned that there's a lot more than we can still work for the tool to be as user friendly and as practical as possible. So the tool requires a team to have all data or as much data as possible in order to assess each of the site characteristics and in order to assess those climate hazards. So we are going to continue to work with the teams on how to provide this guidance on how to introduce the specific data that they need. And also they they understand that, you know, the value of this tool is huge. And they really want to develop the knowledge and it's needed to implement this tool. And we will therefore provide capacity building and work with the broader team, because as you know, we've only engaged with a few representatives of each of the WWF offices, but we will continue to expand that to the broader teams in country.

D

Doug Parsons 1:22:07

Okay, related to that, what are the next steps for the tool development,

N

Nicole Chabaneix 1:22:10

we are finalizing the draft of the tool, which will then be shared with the teams to implement as part of their project activities. And we are also going to be working on a web based version, which will hopefully increase the functionality and the speed and hopefully be also shared with a broader audience who can implement the tool within different projects that they're working on.

D

Doug Parsons 1:22:34

Okay, last question. You were able to go scuba diving in a cenote down in Mexico, what was that like?

N

Nicole Chabaneix 1:22:41

Oh, that was amazing. Yes, I've never taken dives into notice before. So it was a little bit of a challenge for me, because as you know, you go very deep, and you go in a cave. So that was just an amazing experience. But also one that lets you see mangroves from under the water, which was also very relevant to the work we were conducting in media. So it was really, to me part of the experience of doing the field testing.

D

Doug Parsons 1:23:08

Awesome. I had a great time in the cenotes to well, Nicole, thank you for coming on. And thanks for all your help for what my role was in August. And good luck with what you're doing.



N

Nicole Chabaneix 1:23:18

Thank you, Doc. And please join us again in our following trips.

D

Doug Parsons 1:23:22

All right. Let's talk to Shaun about that. All right, Shaun, we are back. It was great to hear from Nicole and Catherine in it. I'm gonna give another plug Nicole was the absolute glue that held us all together. And Nicole, thanks for all your help you made everything just function fantastically. And you made my life a lot easier. So I appreciate that. And also appreciate your reroll in the tool. I also want to give a shout out to Emma Barnes she was critical in helping coordinate a lot of these interviews. Thanks, Emma. And then it was also interesting talking to Catherine who's from the Brisbane area and I used to live in Brisbane. And so it was nice to be able to chat about some of the local mangrove forests there. But some commentary from me just about the workshop, we had the opportunity to go on that field trip to see some Mexico mangroves just like on day two, which really helped everyone I wasn't there informing the tool I was there just interviewing people. But people came back from that field trip seeing the mangroves hearing from the Mexican biologist who understood restoration the area and I just think it just flipped their brains in ways that made the whole workshop that much more productive. So that just some firsthand observation of actually being part of that. And the workshop extended it for like three days and everyone just just was full on for the entire time. So it was interesting seeing how it influenced the tool.

S

Shaun Martin 1:24:42

Yeah, I heard great things about the workshop and people came back really energized. I mean, we all kind of got used to not traveling for work over the past three years. And we kind of forgot that it's really great when people come together and then see the work that you're doing in the field to motivate Meet people to spur innovation and collaboration. And I just think we need to do more of this in the future.

D

Doug Parsons 1:25:07

And I just also want to say I was there to observe so much great work, lots of just information sharing, even happening at those informal moments. So that was fantastic, too. All right, Shaun, it was great rehashing what we did at the workshop. But we're at the end of the episode here, but we want to go over a few of the main points. Can you just give us an overview of those three strategies, again, because I think that's so important for people to just kind of keep connecting the dots to what people were saying.

S

Shaun Martin 1:25:33

Sure. So our approach in all of our adaptation work, which is helping people adapt to climate change in harmony with nature, we need to do three things. We use nature to help people adapt. And then we use complementary adaptation measures that avoid or reduce harm to nature. And then third, we help manage the climate risks on nature itself. And we really need all three of those strategies to succeed. We can't rely just on nature without considering that

people need more than nature. And that nature itself is also vulnerable to climate change. That's why we need to move away from business as usual conservation as a single silver bullet, hoping that everything will solve itself. And I'm hoping through this mangrove and community climate project, we're able to demonstrate how we can apply all three of these strategies and get better results.

D Doug Parsons 1:26:25

Thank you, Shaun, for reminding us the strategies, and we're gonna have all that information in the show notes for this episode. I'm just curious. You've you've mentioned at the beginning of the episode that we've we started this off in Kenya and that workshop that I was able to attend with you any observations, this is this process that's unfolded from when you think about what got started with the strategies in Kenya, to where we are today coming out of Mexico? Any thoughts?

i 1:26:50

Yeah, we really want to apply these three strategies. But often the way our organizations are structured is each group has maybe working on one of them. And we really need to bring them all together to have a comprehensive approach. So we have experts on ecosystem responses to climate change people like Catherine Lovelock, and we have people that are understand how the value of using mangroves for ecosystem based adaptation people like Siddharth, and we need to bring all those disciplines and all that thinking together throughout all of our work.

D Doug Parsons 1:27:22

Alright, Shaun, you're not going to get away without me asking you this. So where are your favorite mangroves?

S Shaun Martin 1:27:28

Yeah, and I've seen quite a few. I've been fortunate to travel all over the world. And you know what, sometimes mangroves aren't all that impressive, but let me tell you, the best ones I've ever seen are outside of Tumaco, Columbia on the Pacific coast. The mangroves are ginormous 60 feet tall, huge trunks. You're going down a boat through these cavernous tangles of mangrove forests. It's just amazing and anybody that gets to go there, I would highly recommend a trip to see the macros.

D Doug Parsons 1:28:02

Alright, I want to encourage my listeners reach out contact me and let me know what your favorite mangroves are. And I'll share that with Shaun because I'm sure he'll be curious to please do. Alright, Shaun, this has been fantastic. It's always fantastic partnering with you partnering with World Wildlife Fund. Very excited to release this episode. Thanks for coming on and sharing your story.

S

Shaun Martin 1:28:22

Thank you, Doug.

D

Doug Parsons 1:28:26

Okay, adapters, that is a wrap. Thanks to everyone for participating in this episode, and to Shawn Martin for grounding us in WWF mangroves for community and climate project as someone who strongly supports nature based solutions to climate adaptation. I have great respect for WWF leadership in this field. They have brought together some of the foremost experts in coastal adaptation, and it's clear that mangroves will play a critical role in successful adaptation efforts. And what a fantastic voyage to Meridia, Mexico. It was my first time visiting this region and I had a chance to explore Mayan ruins sample Mayan cuisine, snorkel and stunning cenotes and of course, wander through Mexican mangroves. I have a deep love for mangroves. As a child I spent countless hours waiting in the mangroves of Sarasota, Florida with my cast net eyeballing huge schools of mullet. Over the years I've been fortunate enough to see mangroves from all over the world from the secluded mangroves in Bocas del Toro, Panama to the urban mangroves in Nudgee beach and Brisbane, Australia. I've always been drawn to mangroves exploring their beauty and ecological secrets. It's wonderful to see that mangroves are finally getting the recognition they deserve as they will undoubtedly play a crucial role in coastal adaptation in the decades ahead. If you're interested in learning more about WWF three prong approach to adaptation Be sure to check out the show notes for this episode, which contain numerous reports and resources. You'll also find links to my guests there so you can learn more about the incredible work they're doing. This won't be the last episode I do on mangroves. There are many more stories to tell. So as you heard I partnered with WWF in this episode to tell their adaptation story. Are you struggling to effectively communicate your climate adaptation story to the right audience? Are you finding that traditional methods such as webinars and white papers are not resonating with people and promoting your work? If so, consider telling your story through a podcast. sponsoring a whole episode of America adapts is a great way to focus on the work you're doing and share it with climate professionals from around the world. I personally go on location to record sponsored podcasts which allows for a diverse range of guests to participate. You'll work with me to identify experts who can represent the amazing work you're doing. Past partners have included NRDC, University of Pennsylvania, Wharton, UCLA, Harvard and various corporate clients. By sharing your story with my listeners who are some of the most influential people in the adaptation space, you'll have the opportunity to reach a wider audience. Additionally, podcasts have a long shelf life making them a valuable addition to your communication strategy. There is no better way to get your message about adaptation out to some of the most active and influential professionals in the world. Okay, adapters. I truly enjoy hearing from my listeners, don't hesitate to reach out and say hello, if you have a suggestion for guests feel free to let me know your feedback is one of the highlights of my week and sometimes leads to exciting opportunities. You can reach me at America daps@gmail.com So don't hesitate to send me an email. Okay, adapters Keep up the great work. I'll see you next time.