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>> CATHERINE RIIHIMAKI: The scientific verdict is unanimous. Human survival depends on a planet rich in other species.

>> NEWSCASTER: Scientists note that more than seven billion people on this planet depend on the delicate balance of biodiversity to survive.

>> CATHERINE RIIHIMAKI: But there's danger ahead. Humanity's life support system is collapsing because of us.

>> NEWSCASTER: Nature is now in more trouble than at any other time in human history. Species are being lost at a rate tens or even hundreds of times faster than in the past.

>> CATHERINE RIIHIMAKI: And uniquely rich ecosystems like the rainforest of Brazil are particularly at risk.

>> NEWSCASTER: Brazilian officials have told the BBC that there's been an aggressive increase in deforestation since the election of President Bolsonaro in January.

>> CATHERINE RIIHIMAKI: It's urgent then to document our current biodiversity and mobilize the public to protect it. My name is Catherine Riihimaki and my guest today has spent her career capturing the public's imagination about human interactions with the natural world. Katie Carpenter is an environmental filmmaker. Her releases include films like Ocean Warriors, Battle for the Elephants, and A Year on Earth. Katie, welcome to All for Earth.

>> KATIE CARPENTER: Thank you so much.

>> CATHERINE RIIHIMAKI: Let's start with a description of the types of films you produce. Are there any common themes beyond the fact that they're about the environment?

>> KATIE CARPENTER: I have - I started being just kind of a general interest reporter. I did cultural films. I did history films. And the first time I was recruited to do a series about environmental issues, it was called Race to Save the Planet, quite a few years ago now. And they only hired producers who had zero science or environmental experience. That was the rule. They said, "The science and environmental reporters have not handled this story well. Not enough people care. We need all these other people to come and do this story." So I fell into it really without any background whatsoever. And at the end of two years filming in Brazil and India, and going to the World Bank meeting in Berlin, and seeing people screaming and yelling about environmental issues. I realized that I couldn't go back and just do, you know, like child figure skaters. It just wasn't going to be for me. So --

>> CATHERINE RIIHIMAKI: No offense to figure skaters.

>> KATIE CARPENTER: No. I mean I love to watch them, but I don't want to, you know, you spend a year making a film. It runs on National Geographic channel for an hour and then it's gone, poof. And if you're going to put that much effort and money into something, I feel like it needs to have a little bit more impact, or at least be talking about something that people really need to know about. So I started with wildlife films. From there, I went to toxic water, and from there, I went to very endangered species in places like Cambodia and Indonesia, which really have difficult other issues, too, that need to be looked at. And, you know, I think by the time we got to Ocean Warriors, we realized that we were dealing with kind of a life or death situation. So the films have gotten more serious, but at the same time, the world of media has pulled us toward more adventure, more adrenaline. So they're both more serious and more, what's the word, frivolous, at the same time. And these two things are kind of impacting each other in negative ways, I would say.

>> CATHERINE RIIHIMAKI: That's interesting. I'm sort of curious given that you come from a different background than I do, so, you know, I'm a scientist, so I come from a more technical background. Whether you view your role partly as historical documentation. Are you looking at -- -- I guess the question is whether the - how much the story dominates and the storytelling dominates. And, you know, whether that gets in the way of the scientific reality in the favor of the story that you're trying to tell.

>> KATIE CARPENTER: We try very hard to prioritize the science and the scientists over the story and over the other, you know, interesting fringe elements that might be going on at the same time. It is hard, if you're working for cable television, to keep the story as serious as it needs to be. But it's also true that we get pretty good information, pretty good data from researchers who tell us, "Scientists are not being well portrayed on television. Here's why. What can you about it?" And then we're enlisted in the cause of getting science to the public through ways that they may not otherwise be able to access or even want to access. So we need them to be more personal. We need them to be more relaxed. We need them to, you know, go outside, to take off their lab coats, to reduce the wall between them and the public a little bit so that the public can consume the science more easily, more readily. I mean, there's a climate scientist named Katharine Hayhoe. I don't know if you know who she is.

>> CATHERINE RIIHIMAKI: Yeah, absolutely.

>> KATIE CARPENTER: Everybody points to her, but, you know, she's done really well and she's been a model for other scientists. You know, just like drop the heavy glasses, and the starchy lab coat, and just tell us what you're doing, why you're doing it, and how interesting it is.

>> CATHERINE RIIHIMAKI: That's interesting. Is it the challenge for the scientists, which is sort of how you're presenting this, or is it the filmmakers who haven't escaped the tropes that they've been sort of trapped in?

>> KATIE CARPENTER: Mm-hmm. It's both, and I think now we've been called upon, both you guys and us guys, to make it teamwork and spend more time with your scientists. You know, when I first went to work at the Discovery Channel, we would grab a camera crew, go to the lab, shoot an interview for an hour with somebody we'd never met and often never spoken to. Leave the lab. When you get back, it seems kind of wooden and it doesn't end up getting that much air time. Now, you know, we spend a lot of time on the phone beforehand. We go, we spend a couple of days before we shoot. We don't sit in the lab anymore chair to chair. We walk around. We go to the study site. We try to make it feel a little bit more granular and interesting. And I think, you know, and we just have to keep testing. We have to try new things, and we have to keep testing, and seeing what breaks through.

>> CATHERINE RIIHIMAKI: Yeah. You mentioned the frivolous aspect of this and where do you see that coming out? And does that differ depending on who the channel is or who the audience you're imagining is?

>> KATIE CARPENTER: Yes. I think that I mean we can name names here. We're among friends. I think that my experience working at National Geographic was a lot more substantial than, for example, when I ended up at Animal Planet on Ocean Warriors. National Geographic will sit down. They'll bring a couple of scientists in and these folks they call National Geographic explorers, who are often photographers who have been all over the world. And you'll sit around a room for like all day long and you'll do a beat sheet on your show. "Oh, yeah, we're going to do elephant poaching and the illegal ivory trade. Where do we need to go? Who do we need to talk to?" And you put it out on a large white board, and you erase it many times, and write it over again, and it just seems like it's had some brain power applied to it. I didn't really find that at Animal Planet and I think it's safe to say now because they've revealed themselves to be all pit bull. They've given up on elephants and marine mammals, altogether. So I think that's where they're going. That's fine. Now we know that that's not where we go and that's not where we take our scientists. We're going to be better off if we develop an idea for a show, connect with the scientists, make it really good, whether it's in that geo or out on the streets somewhere. Take the big idea to a network that's going to appreciate it. And increasingly, that's an HBO, or a Showtime, or, you know, Netflix, not the usual bear.

>> CATHERINE RIIHIMAKI: Are you in a position where you have that luxury to kind of shop around or are filmmakers sort of in this dire industry where you have to take whatever sponsors you can get?

>> KATIE CARPENTER: It's we have to shop around. There are no like actual filmmakers on staff anywhere anymore. It's mainly just program executives at these cable channels. And then the independents come in, you know, every hour on the hour and pitch their ideas. And I would say the last maybe half a dozen films that I worked on were commissioned that way. I did a show that was paid for by NBC and produced by MSNBC called Future Earth, which was about endangered species. And we shot all around the world for, you know, did a two-hour show with Jeff Corwin as the host. And it had a big budget and a lot of fire power to it in terms of scientists and real location situations with endangered species. And that's really the last time I worked inside a network and a network paid for that kind of show. Now it's like pulling teeth. You've got to run all over town. I mean, I'm going to L.A. next week with a new show and it's going to CNN studios, Discovery studios, Netflix, and places I've never even heard of like Quibi, maybe you've heard of.

>> CATHERINE RIIHIMAKI: Hm, unh-unh.

>> KATIE CARPENTER: Quibi was founded by Meg Whitman and --

>> CATHERINE RIIHIMAKI: Okay.

>> KATIE CARPENTER: -- her colleagues. So I mean there's new networks coming up all the time, thank goodness, because they're not hardened to this idea to, you know, that you can't put serious environmental issues on the air. You can. You just have to find more interesting ways to talk about them.

>> CATHERINE RIIHIMAKI: So I'm curious about that. You know, in addition to you being an environmental filmmaker. You were also executive director of a program called the Evidence-Based Science Communication Initiative at the Law School at Yale University. Are there particular techniques that you use in your communication that engages the audience and builds empathy for the environment or for specifically endangered animals that you're dealing with?

>> KATIE CARPENTER: Well, that's a great question, and what we try to do here in the lab at Yale is we try to look for shows that cover individual topics in different ways. For example, we did a study and we looked at four different evolution programs. You know, there's a lot of polarization in this country around evolution.

>> CATHERINE RIIHIMAKI: Mm-hmm.

>> KATIE CARPENTER: We took clips from these four shows. We ran them in a large sample size study, 5,000 people, and then asked them questions not about the shows afterwards but really science literacy questions. Just to see did they have their interest level stimulated by these programs. And it was really interesting to see the difference. And in fact, Dan Kahan, who is the leader of this project, who teaches at the Law School and is also a psychologist, he felt that this study was important. Because it not only told us a little bit about how to produce shows differently, but it also taught us something interesting that was above that. That if you have something called science curiosity, that this curiosity can serve as an antidote to political polarization. And if you apply this, I mean, it can basically inoculate a viewer against a kneejerk reaction they might otherwise have at the beginning of a program. "Oh, this is going to be about evolution. I don't want to watch this. These are those crazy liberals making TV shows about things that we all know the truth about." And so Dan developed this great theory. From that, he did subsequent studies. He's created something called the Science Curiosity Scale, so we can better understand who has it, how you can trigger it, whether it can help us all. So the difference between the show that kind of won out in that test and the other shows is that it started with a kind of a long, meandering, very congenial, and engaging story. That didn't seem to be about evolution at all. It was a great story about a vervet monkey. You know, it fades up from black and this monkey's in his cage and he's hitting the bar, the red bar, the green bar, trying to get the food. But he can't figure out how it works. Like the food seems to be coming randomly. You can tell

he's confused and he's frustrated. And then fade to black. Come back up, it's the following morning. The scientists have taken that monkey. They've given him brain surgery and they've turned on his color vision because he was color blind. Ah, so then they put the monkey back in the cage and he's hitting the green bar, hitting the green bar, he's getting the food, and he's happy. So then they go into a discussion of, well, you know, which animals have color vision and which ones gave it up in order to get something else, like a stronger sense of smell. Oh, dogs got a smaller - you know, it just led into, well, who has sense of smell, and who has better eyesight, and who has better hearing, and how that happened over time. So by minute like nine, when they first say the word evolution, the whole group is there. And we found in the testing afterwards that the people who were self-reported Republicans, they stayed with the show. When asked did they want to see the rest of the show, they clicked yes. And even did they want to receive the whole series, you know, online to watch later, they said yes. And this didn't happen with any of the other shows. So Dan helped us develop a series. This is guidance. These are not rules that anybody's going to accept. But the guidance was don't be putting these polarizing teases at the top of your shows. Every show has one, 90 seconds, "We're going to tell you why the fight about evolution is happening." You know, don't even say it. Just go right into the show. Tell a story. Introduce some interesting characters. And then you'll see more people will come along.

>> CATHERINE RIIHIMAKI: So what does that look like for environmental films? Are there examples of sort of how you lure the audience in that doesn't make it polarizing?

>> KATIE CARPENTER: Well, I can tell you that we edited two versions of Ocean Warriors. That's a six-hour series. The series that aired on Animal Planet has a polarizing tease at the top, a lot of fast cutting. People yelling at each other and boats exploding, things like that. The other version, which Vulcan paid for and which was distributed internationally and educationally, that version didn't have any teases at the top. And it, sure, you know, both rushed by and people said exciting things. But you didn't have to like tell the viewer from the outset, "Oh, you're going to find out there's good guys and bad guys in the world and these bad things are happening and they're all your fault." So we had the opportunity to look at these two series and say, well, look at that, you know. Television should really go this way. But so far, ratings and advertising goes toward the multiple explosions in the first 30 seconds. You know, like they always used to say, if it bleeds, it leads, and bang, bang still starts a documentary.

>> CATHERINE RIIHIMAKI: Have you gotten other feedback on those two versions in sort of comparing their effectiveness?

>> KATIE CARPENTER: That study is not finished, but I, you know, anecdotally, yes. Everybody, even, you know, people on the other side of the political aisle. Appreciate a show that will take you through some stories and some interesting characters to arrive at a presentation of information. Who wouldn't want that? So we're wrong to assume, you know. The audience of Discovery Channel has recently been revealed to be like these crazy truck driving guys from the commercial that they've recently put out advertising the fall slate. And you see guys are like, oh, they're punching each other, and they're knocking over animals, and they're driving pickup trucks back and forth across the screen. Really? I mean, that may get you ratings, but the audience you're getting is not going to buy your products, so why don't you rethink that?

>> CATHERINE RIIHIMAKI: Yeah, interesting. One of the things that I've noticed for your projects, it seems to be that there's a human community that's involved, right? Ocean Warriors has people involved. It's not just about the animals. And is that a deliberate attempt to create a storyline that humans can relate to?

>> KATIE CARPENTER: Yes, very much so, and good perception. Our shows, my partners and I have always made shows that include human-animal interaction to a very high degree. And I taught film this past summer to Princeton students who were studying in Kenya. And we went through kind of the history of wildlife documentary making and we started with the early David Attenborough shows, and then Planet Earth, and now this new one, Our Planet. And then we compared that to some of the other shows that Nachio [assumed spelling] and we had made, Discovery had made, and PBS had made. And when you have humans in the picture, it might not be as gorgeous a close-up shot of the snow leopard across on the opposite hill. But it does bring it closer to home that this animal and we inhabit the same place, and we both need to stay there, and we need to find a way to make that possible. So putting humans into your film, again, it was kind of a ratings thing for many years, but now that's all changing. And I have to give credit to the filmmakers over the last maybe eight to ten years. Who've brought really interesting human characters to the screen in environmental films like The Cove, and Racing Extinction, and Blackfish. These are films that really should be looked at again. I mean, if you focus on what's really happening in those films. A lot of thoughtful Hollywood executives, and storytellers, and screenwriters have nothing on what these people went through to make their story sharp, and compelling, and compassionate. And I think so we've benefitted. They kind of broke the ice on that. And now when we did our investigative film, Warlords of Ivory, after finishing Battle for the Elephants. And we decided to create a situation in which our investigator was planting transmitters, and batteries, and antennas inside fake elephant tusks. And then we were putting them out into the supply chain and watching via satellite where those tusks were going. And how they were traveling up out of the Congo, and across Sudan, and over to Mombasa, into a container ship, and off to China to show, you know, once and for all, how that was happening. Well, we had elephants in there and humans in there, and they both had very high stakes, and they were kind of fighting for each other, you know. So I feel like there's just so many new ways we could do this and if we were given a little bit more opportunity to experiment, I think we would.

>> CATHERINE RIIHIMAKI: Can we talk a little bit more about the course that you just led? So you were teaching a documentary filmmaking class in Kenya and it was a handful of Princeton students, some students from Nairobi. What was that experience like and why is teaching an important part of your work portfolio?

>> KATIE CARPENTER: I am I just have to say I'm humbled and grateful by the whole experience. I think it's very cool that courses like this even happen. It shows a lot of insights to even attempt this. First of all, you take the students out of the U.S. where they're digitally distracted and you put them in a place where there's no Wi-Fi. That was kind of incredible. And you challenge them to think about, you know, what do you watch? What do you consume? Is it short? Is it long? Is it comedic? Is it, you know, romance? Like what are you consuming and how can you take what you consume and apply it to this issue, which you also know, but in a separate part of your brain, that it's really important? So we spent the first couple of weeks of the class doing lectures like any ordinary film course would be. We showed clips and we talked about different approaches to wildlife and environmental filmmaking, and also a lot about climate change. And then we set the students loose first to do short pieces and

then to do longer films in teams. Every team had a Kenyan, so they had the perspective of the local filmmaker, too. And they went off and they made really hard films, challenging films. I was impressed. I mean there were easier films to do. “Oh, let’s do this film about this elephant that’s down on the river that’s been shot and needs veterinary care.” That’s a good story that talks about poaching, but we’re past that now. We are in a real crisis all over Africa, what they call human-wildlife conflict, and it’s just about running out of land. So these students found places and ways to tell those stories and the films they made, I mean seriously, you would weep. We’re going to - when they’re all finished, we’re going to post them. And I think people will be surprised what an uninitiated documentary filmmaker can do given a little bit of brain space, a powerful issue. And all the tools that they bring with them since they’ve been making videos since they were like nine.

>> CATHERINE RIIHIMAKI: Right. I was poking around on YouTube for some of the videos that I think have been posted already. And, you know, I was really struck by the fact that they’re in a place where there are lions, and giraffes, and really charismatic megafauna. And one of the videos was about insects, and another one was about the ranger that keeps people safe at the research station from some of the large, charismatic, megafauna. And maybe that just illustrates your point, that they’re finding kind of the surprising stories and not the easy ones that are maybe a little trite, at this point.

>> KATIE CARPENTER: Yeah, well, you know, that film about the ranger is interesting. Because the powerful point that is almost forgotten and only comes out at the end is that rhino that you see in the picture with the wildlife facts is one of the last two northern white rhinos in the world. And those two are both there, and guess what? They’re both females. So that’s a hardcore story. Or they didn’t make their whole story about that. They ended up making their story about two really interesting characters, a ranger and a vet. And this little fact slipped out at the end and I think it leaves people gasping. I think they really did a good job. It was subtle, yet powerful.

>> CATHERINE RIIHIMAKI: Yeah, right. Are there kind of implications for kind of the way that the students maybe approach understanding the environment at the beginning of the class versus where they end? Are there implications for kind of misconceptions that maybe the public has about the environment or about environmental issues?

>> KATIE CARPENTER: Yes. Yes. I think one of the problems, it was really funny. I was interviewed for a New York Times article last week covering the headline was, “How Come Hollywood Doesn’t Care about Climate Change?” And she - the reporter had talked to a lot of different people and the consensus seemed to be that, well, there were two problems. One is climate change is too big, too far away, and too not proximate to where you are. Like it’s not at my door to really make people care about it yet. So that causes Hollywood writers to think we can’t cover it. It’s also extremely divisive, as we know, and rather than try to figure out ways to cover it and bring people together, they just pretty much ignore it. But also, there’s kind of like a backlash problem that’s happening which is that the villains - environmentalists make really good villains. Screenwriters --

>> CATHERINE RIIHIMAKI: Really?

>> KATIE CARPENTER: -- have come - screenwriters have come to see them as great villains. They don't want you to drink out of plastic straws. They don't want you to drive your car. You know, they're trying to always tell you what to do. They're scold. And so it's almost like environmentalism and filmed entertainment are at a loggerheads here. And we need to find a way to build bridges. Just as we've been working to build bridges between producers and scientists, we need to build bridges between, you know, entertainment writers and this whole concept of climate and conservation. It was the very first assignment I gave the students in June was read this press release from the U.N. about the global assessment recently released. That says, you know, 1,000 new species are going to go extinct by the end of this century. This was a huge news flash, and in our world and in the world of scientists, it just made a very loud explosive sound. Oh, my gosh. This is happening. And yet, by two days later, it was absolutely gone. It took less than even one news cycle for it to disappear. Nobody really wrote anything powerful about it. It was a little blip. It's embarrassing. I mean, you know, Fox News covered it by saying, "Oh, yeah. They say all these animals are going extinct and it's our fault." And they made it about who portrayed who as being to blame instead of saying, you know, let's focus - let's listen up. Let's do something. And so we gave the students basically the press release, and three related articles, and some tweets, and a few posts, and we said, "How can you make this turn out differently?" And it was great what they came up with. I mean, one came up with a music video. Another one came up with a feature film script, which was really pretty impressive. I mean, they all had different ways to do it, but they focused on individual stories and individual animals. They did it almost instinctively. If you look at the U.N. press release, there's not a single name of an animal in there. They don't say rhinos are going to be extinct. They just say 0.3, 0.2, something, something. It's just, you know, it's a wall, wall of numbers, wall of stats. So these students really pulled the story out of it and I think they did a good job.

>> CATHERINE RIIHIMAKI: Yeah, I think my favorite news story about that press release, and I think it's one million species that are starting to go extinct, not 1,000.

>> KATIE CARPENTER: Oh, yeah. Good correction.

>> CATHERINE RIIHIMAKI: But they sort of gave the overview and then they said, you know, here are some species that are threatened. And they sort of the stinger was vultures, and, you know, you may not be concerned about vultures. But in fact, they're a critical part of our food chain, and our ecosystems, and half of the species are threatened and that's a real problem, so.

>> KATIE CARPENTER: That's so true and I did hear somebody say, and this is why the numbers got messed up, that 90% of those, you know, deemed to go extinct by that time period, are insects. As if that was, oh, well, therefore, we don't need to worry. Let's not just discount insects. They're keeping the planet afloat, at the moment. You know, we need to pay attention to all the creatures that are here and better understand how they play a role in this very intricate web that is literally keeping us alive.

>> CATHERINE RIIHIMAKI: Yeah. Well, I think that's a great sentiment to end on. This has been just a fascinating conversation, so Katie, thanks so much for joining us, and I wish you all the best of luck with all of your endeavors.

>> KATIE CARPENTER: Thank you so much. I enjoyed it.

>> CATHERINE RIIHIMAKI: Katie Carpenter is a filmmaker and environmental communicator. Her most recent film project is Protect Your Water at ProtectYourWater.com. Please also check out her film, Chasing the Thunder, a documentary about a fishing vessel that was illegally fishing in waters around the world. Finally, you can learn more about her work on the science of effective communication at CulturalCognition.net. Please subscribe to our podcast feed wherever you get your podcasts. I also hope to see you all in person October 24th and 25th at Princeton University for a celebration of 25 years of the Princeton Environmental Institute. Several of our podcast guests will be speaking at the forum and there will be many more leading figures in all aspects of the environment and sustainability. Until then, be well.

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