Beth McGee: So my name is Beth McGee. My current title is the director of science and agricultural policy at the Chesapeake Bay Foundation. And if you had asked me 10 years whether I would have the title of agricultural policy in my title, I would have said you were crazy because I'm actually an aquatic toxicologist by training. I got my PhD from the University of Maryland in, I don't have to say the date, but it was in aquatic toxicology and ecology. I worked for the US Fish and Wildlife Service for a while in Annapolis in their contaminants section.

Did some work at University of Maryland, Maryland Department Of Environment, which is a regulatory agency in Maryland, EPA. And then 15 years ago came to the Chesapeake Bay Foundation as a scientist in the Maryland office and then kind of moved into my current position. So I've always been passionate about the Bay. In fact, I remember when I was in middle school, we got a solicitation letter from the Chesapeake Bay Foundation with the save the Bay bumper sticker. And I remember thinking at that time that like I wanted to work on the Chesapeake Bay. And so after I graduated with my masters from Delaware, I wanted to move to either Maryland or Virginia to do Bay stuff. And so I've been here ever since.

Genevieve De Mahy: So when you got that bumper sticker in the mail, was that the first instance that inspired you to be passionate about the Bay or were there other experiences related to working on the Bay that made you feel like you knew that that was the career path you wanted to take?

Beth McGee: I had been interested in pollution, water pollution. I remember as a kid walking in streams and if I'd see trash, picking it up. So I think the environmental ethic was just in me. And then I had always liked the salt water and I liked to snorkel. And so I think just something alluring about the Chesapeake Bay. I think even back then there was how beautiful a place it was. I didn't honestly spend that much time on it growing up. But I moved here in 88 to take a job with Maryland Department of the Environment. And again, it's sort of, I think it just resonated with me, this notion of save the Bay. It was a local resources and I'd certainly heard about it. And so I wanted to move to the region, and I did.

Genevieve De Mahy: And what is your role in your position now?

Beth McGee: A couple of things. One is I'm the main liaison with the Chesapeake Bay program, which is the federal state partnership focused on Bay restoration. It's the group that developed in 2010 what we call the Chesapeake clean water blueprint, which is the pollution caps for the Bay. And the state's plan is to achieve those caps, which has really been the focus of my life since coming to the Bay Foundation is reducing nutrient and sediment pollution to the Bay and that being a key component of that. So part of my role is to be our face with the Bay program, weighing in on decisions that they make. Another part of my job is because agricultural pollution is the watershed why the biggest source of pollution coming into the Bay. It's to help coordinate across our state offices what we're

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doing in agriculture. So we have field staff who are on the ground working with farmers to deliver conservation programs. So I help organize that and help us get grants that will promote innovation in that space.

The federal Farm Bill funds a lot of conservation in this region. The newest farm bill was passed in 2018. We were involved in crafting legislation that was incorporated into the farm bill, again, with the idea of improving programs that are helping farmers implement practices as well as bringing more dollars to the Bay. So I was actually just on a call before this meeting with some partners in Virginia and Pennsylvania and Maryland looking at how we can bring more technical assistance dollars to the region. Again, you need those boots on the ground to deliver conservation programs. And so that's I think a snapshot of what I do.

Genevieve De Mahy: You were talking earlier about your original line of work being-

Beth McGee: Aquatic toxicology.

Genevieve De Mahy: Great, thank you. In that field of aquatic toxicology, what exactly were you doing there and what role did that play?

Beth McGee: So beginning work on assessing how toxic sediments are. So, for example, places like Baltimore Harbor or Anacostia River, Elizabeth River and the Bay have a lot of industry, a lot of toxic chemicals going in. And one way we assess how toxic they are basically, is to grab mud from the bottom of the Bay, bring it into a lab, put critters into it and count how many die or not. Another way to look at it is you can assess, and this is true for streams or the Bay, you can assess sort of the quality of the bottom by looking at what critters are living there. some critters are really tolerant of pollution, some are sensitive. And so if you take a sample, you sieve through it, you look for what's there, you can tell by what's there whether that's a healthy place with a lot of critters that are sensitive to pollution or not a healthy, if you only have a few.

And so my earlier days working in this region, and my PhD, was based on doing some toxicity work, doing some field assessments throughout the Bay region and Baltimore Harbor, Anacostia and pretty much to give us a handle early on about how widespread is the toxic issue in the Bay by looking at some of these indicators of sediment toxicity and bent the community. And then I'm moved more into, so I was doing a lot of field work. I moved more into policy, so clean water act policy when I was with US Fish and Wildlife Service and that's when I started to actually interface with, the scientists at the Bay Foundation and kind of recognize more of who they were and was more moving into policy and away from on the ground science.

Genevieve De Mahy: In that transition from moving away from field work into policy, do you feel the same level of connection or do you feel a separation? Is there any…

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Beth McGee: I do. I mean I miss being out on the water. I mean, I think that anyone who has spent time in the field and then is more tied to a desk misses that time. But what I really enjoy about my job, and especially with the Bay Foundation, is that we affect policy. Like if you want to make environmental change, we need the science to support our policy decisions, but to actually write legislation or be involved in reviewing regulations to affect that policy change is really rewarding. And so from my perspective, I have a great background in science that enables me to use science to inform our policy decisions. But ultimately you make or break environmental condition by laws that are passed, regulations that are passed or not passed, as the case may be.

Genevieve De Mahy: How do you think the conversation about Chesapeake Bay restoration has evolved during your career?

Beth McGee: So when I first moved here, and again that was an 88, that was right after, or not too far after, the first Chesapeake Bay watershed agreement was signed, which was in 83. And so a lot of it was new then, this whole notion of collaboration. And so there was a lot going on. And you know what I've seen is that initially the Chesapeake Bay program tried to do everything, and still to some extent does do that. So I focus on water quality, but there's people who focus on fish and wetlands and all sorts of things. And so the first few bay agreements were really, everyone saw it as their opportunity to get what they wanted to see in writing in that agreement with hopes that it would be implemented. And what we saw over several agreements, there was first was in 83, there was another one in 92, one in 2000, is that there were lots of commitments made and implementation really failed.

And so through a series of lawsuits, et cetera, in 2010 as I mentioned, this what we call Chesapeake clean water blueprint was initiated with an underpinning of clean water act law and regulations driving it. It became much less voluntary, at least in the water quality space and more regulatory. And from our perspective, that has made the difference in implementation.

Genevieve De Mahy: Do you think there are voluntary programs that are successful? I mean obviously requiring somebody to do something versus requesting they do something.

Beth McGee: Right.

Genevieve De Mahy: Where do you see that friction or benefit on the other side?

Beth McGee: Well, and I say that the blueprint is regulatory, but the reality is that, under the clean water act, agricultural runoff, most of it is exempt. So we still have to do, I mean the states can pass measures that affect farmers, and they do, but the big hammer we have in the environmental space under the clean water act, we don't have with agriculture.

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So we're still relying on voluntary measures and they still do, they do work. But from our perspective is you need carrots and sticks. And you can have both. You could mandate that a farmer do something, but then pay them to do it, so they can work very well together. But I think the failures of the past multiple watershed agreements, many of them were because it was commitments that were made by officials who were no longer in office when the due date came and it was relying solely on voluntary measures which are only going to get you so far.

Genevieve De Mahy: You talked about where the conversation started. Where do you feel like it is now?

Beth McGee: It's a very interesting time in Bay restoration. As I mentioned, the Chesapeake Bay program, which is this federal state partnership. It's led by the Environmental Protection Agency as a lead federal agency. They're the coordinator. They have an office in Annapolis. But all the Bay States and DC are part of the partnership. One thing that folks frankly around the world and the country look at the Bay program, is that partnership. It's been around for a while. It's a very strong and a lot has been accomplished. I don't want to underplay, there has been a lot accomplished through the various agreements. It's probably one of the more contentious times in the partnership's history because recently the governor of Maryland has indicated his desire to sue both the Environmental Protection Agency as well as Pennsylvania because Pennsylvania is so far behind in achieving the cleanup goals under the blueprint. So that's going to be a strain on the partnership. I mean, there's certainly been friction in the past, but as far as I know, there's never been a state threatening to sue another state.

So I think that dynamic, it'll be interesting to see how it all plays out. I mean, will that because a partnership to break up? Will they stick together? I think we're sort of in uncharted territory.

Genevieve De Mahy: And do you think there's tensions in just in the sense that Pennsylvania isn't necessarily touching the Chesapeake Bay? Do you think there's anything in that relationship that affects it?

Beth McGee: I don't think that's the tension. I think that's the challenge in Pennsylvania, that our bumper sticker, and we have an office in Harrisburg, we've had an office in Harrisburg since the mid eighties. But save the Bay does not resonate with people in Harrisburg. Right? They care about the source by HANA, which is why we talk more about the local water quality and if they restore all the water quality in their local streams, we will achieve what we want to get downstream.

But the challenge is that, yeah, they don't have any bayfront property. There are 33,000 farms in Pennsylvania in the Bay watershed alone. Compare that, for example, in Maryland where the total farm number's more like 12,500. So the fact that they don't benefit from the Bay, the save the Bay doesn't really resonate with them, makes it

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politically more challenging than it is in Virginia and Maryland, who, if you grow up around here, you get it. You love the Bay. And so there's certainly a different mindset. But in terms of the friction, I think that's not it. That's Pennsylvania's challenge. I think the friction is that they are really far behind and that you know the other States are getting frustrated. Because frankly we won't restore water quality down here where we're sitting in Annapolis unless Pennsylvania does their share.

Genevieve De Mahy: What was the most important or impactful project that you've worked on in your career?

Beth McGee: I'm glad you asked that. So I mentioned this blueprint which, under the clean water act is technically called a total maximum daily load, which is basically an assessment of how much pollution can go into the Bay and still achieve what we want it to in terms of dissolved oxygen, which is the… We want to restore healthy levels of dissolved oxygen to the Bay because critters need oxygen to live as well as water clarity because of the importance of underwater grasses and them needing sunlight to survive. So under the clean water act, there's this thing called the total maximum daily load, which again is just like how much pollution do we need to reduce by in order to achieve that healthy bay. In most cases, the TMDL itself is just the allocation of the pollutant loads doesn't require that much implementation. But the blueprint is different in that it has, we've established the pollution allocations to the states.

We have plans, we had at one point an environmental protection agency who was willing to hold the state's feet to the fire to achieve their pollution reduction goals, to establish adequate plans. And a lot of that came out of some advocacy that CBF did prior to 2010 when this thing was established. So leading up to 2010. And I was involved in a lot of that and helping. In fact, there's some letters that we wrote to EPA that some of the ideas that we were promoting with EPA then turned up in their own documents. And so I feel personally very gratified that, that I was at a time when the states and EPA were developing this, this blueprint and that we were influential in what it looked like. It's not going quite as well as we had hoped, given how far Pennsylvania is behind. But I think we've made a lot of progress since 2010 to the present day. And a lot of that has to do with the framework around the blueprint. And like I said, and CBS role in that.

Genevieve De Mahy: If first you could talk about roadblocks, setbacks, things like that that you face in your work. And then, in addition to that, what motivates you to keep going despite those setbacks?

Beth McGee: Yeah, I think we've talked about some of the roadblocks. Again, the blueprint and the states implementing their cleanup plans is contingent on having good plans, which is a first step, but also having someone hold the states accountable for implementing them. And that someone would be the Environment Protection Agency. And they have not done a great job, even prior to the current administration, there were times when we

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had hoped they would have been a little stronger with the states, especially Pennsylvania and they haven't.

So that's an obstacle is that we have a great framework, but it's only as strong as sort of the consequences and the state's concern about those consequences. And Pennsylvania, I mentioned some of the challenges there. 32,000 farms. The legislature has been unwilling to date to do something that is done in Virginia and Maryland, which is to establish a program, a state cost share program that would provide state dollars for their farmers. Which when you think about the number of farms in Pennsylvania, how important agriculture is, is kind of astonishing that they have not provided the state dollars that Virginia and Maryland have. Like Virginia last year gave about $80 million per year for their farmers to do conservation practices. Pennsylvania's amount that they… They don't even have a program like Virginia's or like Maryland's. So that's an obstacle.

So accountability, consequences, the magnitude of the issue in Pennsylvania with all these little farms, those are the obstacles. What keeps me going is we've got great staff in Pennsylvania. There's a lot of momentum. We know a lot of farmers that want to do the right thing. And so we're trying to do, we tend to get more federal dollars to Pennsylvania to get them to establish a cost share program. So the hope that we can continue to make progress is what keeps me going. I mean it can be a little daunting, but you just have to take your little victories. And if we get more money, and again, we know that farmers, for the most, part want to do the right thing, they just need the resources. And so that I think is one of the things that keeps us going.

Genevieve De Mahy: Could you talk a little bit about the EPA and different political changes over time and how that affects your work?

Beth McGee: Sure. So the environment protection agency is to the lead organizer of the Chesapeake Bay program. And frankly, one of the things we have going for us here is the Chesapeake Bay program has been bipartisan since the beginning. And we have bipartisan support in Congress. For example, under the current administration, the funding for the Bay program had been zeroed out by a partisan group of congressmen and women from the Bay region rallied around that and restored the funding. And in fact, this year we even increased the amount of funding that's going to the Chesapeake Bay program. So that, from the bipartisan nature, you know that's all great. But who is head of the Environmental Protection Agency does influence what they are doing, the amount of enforcement that they're willing to do.

I mean certainly we've seen under the current administration that they are rolling back many environmental regulations. And the cumulative effect of all those rollbacks will have an effect on the Chesapeake Bay. I mean not any one of them alone. It's not going to be the knife that ruins Bay restoration. But when you look at the cumulative impact of their rollbacks of things that affect greenhouse gases and power plants and cars and

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things like that, there is an effect on the Bay. And then the other issue we're concerned about, which is I think one of the things that drove Maryland to want to sue EPA, is the fact that they need to be the enforcer for the cleanup plan. And if they are unwilling to play that role, and certainly our belief is that they are not, in just in the way that they talk about the partners and the restoration effort.

There was actually a comment made by the head of the Bay program recently that got a lot of attention where he basically called the cleanup plan and the timelines aspirational and not enforceable. And that didn't go over well with us and a lot of other groups because, again, it's codified in the Clean Water Act and in suing regulations. And so that I think reflects the change in attitude at EPA about what their role is. And again, from my perspective, you need to have someone who's going to hold the states accountable for this to work. And right now that's not what we have.

Genevieve De Mahy: What does the future hold-

Beth McGee: Climate change, we didn't talk about climate change. And we're already seeing the impacts of climate change on the Bay, both in terms of we have a dual double whammy of land subsiding here in this region. And then seas rising. So really what they call the apparent sea level rise in this region is sort of twice the global average because then we had that combination of both. Which means we're losing islands, we're seeing landy road. I mean we're having sunny day flooding, right? Just high tide [inaudible 00:19:23] downtown Annapolis and other areas. So sea level rise is a threat.

Waters are already getting warmer. That's not good for the critters that live in the Bay who are not used to really high summertime temperatures. Also, the reality is that warmer water holds less oxygen. So as we're trying to restore healthy levels of oxygen in the Bay, warmer water is holding less. So it's going to make our restoration of the dissolved oxygen levels more challenging. And more severe storms bring more pollution into the Bay. So that is something that we're really concerned about as we're trying to achieve our existing goals.

It's only going to get harder with climate change. And so that's not a very pretty future to look at. But being the eternal optimist, what I take solace in is that there has been some recent studies looking at the Bay and how it's responding to nutrient reductions. And there's some indications that over the longterm we are seeing improvement, that the system is changing. And so what that says to me is we need to put the pedal to the metal, keep on getting the reductions that we need. We recognize climate change is an issue, but we need to kind of keep on with our path forward and hope that we can sort of get ahead of climate change. But that's what I think probably concerns many people broader than the Chesapeake Bay is the impact of climate change on what our future looks like.

Genevieve De Mahy: You talked a little bit, what gives you solace? Do you have hope?

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Beth McGee: Do I have hope? I do have hope. Again because I look at some of the recent studies about longterm changes that we're seeing in the Bay and I think that there is a lot of effort. We have sort of the framework in place to be successful. And so I am hopeful. I recognize the challenges but I am hopeful. I think I wouldn't probably be in this position if I wasn't hopeful.

Genevieve De Mahy: I'm curious, earlier when we were talking about people who've been working in this field for a long time nearing retirement or already having been retired. For this next generation, what tips, advice would you give the next generation of advocates as they continue this work?

Beth McGee: Wow, that is a hard question. I'm more couched in the science and I see that there's a lot of young scientists coming up. I think technology could be more utilized, both in the advocacy space and in recruiting advocates and also just in how we understand how the Bay works, how we understand how agriculture we can use. So I think I'm maybe a few years away from retirement but not too far where I'm at the point where like I'm not going to be learning a bunch of new technology things. But I think that there is a lot out there. CBF finally for example, got a GIS staff program where we are.

Genevieve De Mahy: Could you talk about what a GIS-

Beth McGee: Geographic Information System. So it's basically mapping. And mapping everything. Being able to overlay data layers of, for example, in the advocacy space, where are our members and where have we done restoration projects. Simple as that. And do have members and maybe we should be doing more restoration. Or where our education programs and where do we have members? So that's a simple example, but it's also useful in thousands if not millions of different ways. So that's just one example of technology being useful to both advocacy as well as our understanding of what we need to do to save the Bay.

And I think if I had any, I guess advice to folks coming up in train, which is sort of science moving into policy, it is A, to be up on all those tools and then B, be multidisciplinary. We're more that sort of the future I think of environmental policy is more bringing in the social science piece, which we really haven't done very well and understanding what affects people's behavior change, whether it's a farmer or whether it's someone you're trying to get to not put fertilizer on their yard and making those connections. And there's a few people who operate in that space, but not as many. And so I think bringing kind of the social and hard sciences together in the environmental management space would be really useful.

Genevieve De Mahy: Do you feel that there's any sort of generational gap in the field, or do you feel like the field is well prepared to have this group of people be retiring and have a phase of leadership go into it?

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Beth McGee: Yeah, no, I think there's plenty of budding leaders out there. I mean I see it in, again in the research science space where, as I mentioned, a lot of folks have retired or soon will. And then I see the up and comers who are, I'm now trying to [inaudible 00:23:53] connections with the old guys and now I need to make connections with the new folks so I can continue to ping them and leverage their knowledge for our advocacy and policy work. And then I look around at folks who are doing advocacy and folks in other environmental groups and yeah, it makes me feel a little the times, frankly, because I do look around and I'm one of the gray hairs in the group. But I think that we'll be well served by the new class of folks who are up and coming.

Genevieve De Mahy: There's such an interesting conversation around changes that individuals can make versus the impact of larger things, corporate agriculture, that kind of thing. What are three things that individual people can do now to make a difference? And then also, obviously we don't want them to not make those changes. But how much impact do you think they actually have?

Beth McGee: I will give a shout out to our Bay footprint calculator, which is on our webpage. I think it's just Google Bay footprint, but I think it's cbf.org/bayfootprint. But basically it asks you how much do you Drive? How big is your house? Do you fertilize your yard? How much electricity do you use? All of those have an impact on the amount of nitrogen that you individually produce. And so it is geared towards… And even has food consumption, because raising animals has a lot of nitrogen associated with fertilizer and manure, et cetera. So there's a few food components. So for an individual you can kind of go in and what is your footprint? You can say, okay, if I ate meat one less meal per week, what would that do to my footprint? And so it allows you to kind of see the impact of your individual impact.

And again, you know the notion of, well maybe your one choice. But if you multiply that by the 18 million people in the watershed, it would be something. So I would recommend people go to that and check that out in terms of their individual behavior change. Because there are a lot of things that we can do. But when I'm talking to people about the Bay and get asked that question to or feel compelled to answer it, even if not asked, it's get involved with your elected officials.

Let them know that you care about clean water, whether that's your county council person or your state representative or your Congressman, or woman, depending on what's going on. But that is hugely influential in terms of helping us pass the policies or stop the bad policies. Get the good policies by contacting your elected officials and getting engaged. Whether it's a phone call, whether it's an email, whether it's a face to face visit, it does make a difference. And that's something that I've learned since being at the Bay Foundation is seeing when we're working… When I first started, I worked in the Maryland legislature, and seeing how when we like phone banked, a particular representative, how they might actually change their vote. So it matters for broader

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reasons than just environmental for sure this time and day and age. But that would be my suggestion.

Genevieve De Mahy: As a piggyback to that, in terms of having conversations with people about the Chesapeake Bay or even just climate change in general, what advice would you give for people who are talking to somebody who may not believe in either of those things?

Beth McGee: I think that people believe that climate change is happening. I think they see more flooding and they see the water is warmer and they see more severe storms. I think that the debate is over what's causing it and then how do you fix it? So I don't know how you convince those people. I mean 99% of the scientists in the world agree that it's human induced climate change. And if you know anything about scientists, you usually can't get them to agree on anything. And the fact that they all agree, pretty much on that is enough to me. So I don't know what the answer is.

I think it's more important in the conversation around mitigation. In other words, reducing greenhouse gases. Because if you don't believe that it's man-induced then you don't care whether we reduce them or not. But on the resilience side of it, so the adaptation, in other words, how do we plan for more severe storms or more flooding? I think everyone can get around that because they see it. Farmers see more severe storms or they see drought. And so whether or not they understand what causes it, they understand that they need to farm in a way that will make them less susceptible to those weather extremes. Because it's happening and it's real and they know it.

Genevieve De Mahy: Is there anything else that you want to add on this recording or anything you feel like should be mentioned for…

Beth McGee: I mean, I don't think so. I guess, from my personal perspective, I had sort of a circuitous path to where I ended up. More than one time in my career did I take a major step backwards in my income level. But it was all sort of to follow my passion. And I ended up in a job that I love and I feel really fortunate about that. And I think my advice to people would be just sort of, follow your passion. There was a quote I love, it's Ben Franklin, or who it was, but it's something like, find your passion, make it your work, and you'll never work another day in your life. And I think that is the advice that I would give to folks interested in this field.

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