

Andrew Saintsing: Hi, you're tuned into 90.7 FM KALX Berkeley. I'm Andrew Saintsing, and this is The Graduates. The interview talk show where we speak to UC Berkeley graduate students about their work here on campus and around the world. Today, I'm joined by Max Lambert, who is a former postdoc and a current senior scientist with the Washington Department of Fish and Wildlife. Welcome to the show, Max.

Max Lambert: Nice to be here. Thanks for having me.

Saintsing: It's so great to have you here. I actually got the tip to interview you from someone else at KALX, John the Reptilian, who's a DJ. I don't know if he's really into reptiles, but we're gonna talk about reptiles today, so it's very apt that he sent the tip. But yeah, apparently you were just in the news about some research that you were doing while you were still a postdoc here, right? So, could you tell us a little bit about the work you've been doing up in Jewel Lake?

Lambert: Yeah, absolutely. So, part of my love of my life are turtles, which is actually not why I was at Berkeley at all. This is more of a kind of a side project between my real field season I was actually funded to do, which is actually mostly up in Portland and Seattle area. But you know, coming actually out of my undergrad (it's been kind of years of making) a lot of my interest is in the western pond turtle, which is California's only native species of freshwater turtle. It's imperiled. So, it's currently undergoing review for listing under the US Endangered Species Act, which is kind of fancy way of saying we think it's in a really bad place. And so, a bunch of scientists and policy folks are looking at the evidence to make it endangered, you know, listing it that way. But one of the threats that we think is out there for the species is another invasive species: the red-eared slider turtle, which many folks will be familiar with from pet stores. They are the inspiration for the Teenage Mutant Ninja Turtles. So, kind of the bands around their eye are the red stripe. And the slider's released all over the world. They're native to kind of the Mississippi River area, but they are so common in California. There are literally millions of them in California. We don't really have any good idea of whether they're impacting native turtles anywhere in the world, especially here in California. And you know, as an undergraduate we did a project where we removed all the sliders in Davis, which is not too far from Berkeley, and saw that over the next couple years the western pond turtles got kind of bigger, fatter, healthier than they were before. And which kind of gave us some first glimpses that maybe these red-eared sliders that are not native are competing with our native species. And so, my kind of goals was to replicate that project in a couple different places, and Jewel Lake was one of them. A couple of sites were centered around Santa Cruz area. And Jewel Lake is great because it's really close to campus. It's got a nice population of western pond turtles and red-eared sliders. It's a place where a lot of people in the East Bay love coming to, you know, watch ducks or other birds and turtles. And so, it's kind of nice. It's also a way to be part of the broader person community in addition to the wildlife community. So, that's kind of how that work got started, was keeping tabs in our nice little semi-urban population up there and seeing whether sliders were impacting our western pond turtles.

Saintsing: Okay, so first off, you're saying that people in Berkeley or the surrounding area are, in fact, seemingly going up to Jewel Lake and depositing pet red-eared sliders?

Lambert: Oh, yeah. Oh, yeah.

Saintsing: And you would highly recommend against that, right?

Lambert: I would. Well, one, it's illegal. So, doing it is against state law. So, don't do that. And it's... You know I highly recommend it not only, you know, if you only care about the environment and wildlife, you shouldn't do that for sure. It's also about your turtle that you have, as a pet hypothetically, loved at some point in time. It's also not great for them, you know? A lot of things that... Our pets aren't necessarily great at being outdoors. Oftentimes they lose limbs because things like coyotes or raccoons or otters bite their limbs off. They catch diseases that they are not going to get inside, and they're always kind of being beaten up, you know? Up there, Jewel Lake's great, you know? Pretty well contained, but there's still the road that has a lot of bikers going past it, so you can get hit by a bike. And honestly, that's a tough life to be an introduced turtle, too. So, for the welfare of your own former pet, don't do it. Don't let it go.

Saintsing: Yeah, do you have any recommendation for... I mean hopefully, like, you would, if you get a pet, you would just kind of see it through its days. But what would be a better solution if you were thinking about going to jewel lake with your turtle?

Lambert: Yeah, well it was the first part what you just said there, you know. The challenge of turtles: they live so long. Seeing it through its days. You buy a turtle that's the size of a quarter, I don't think a lot of people anticipate the fifty year commitment they may have ahead of them. The turtle becomes, you know, the size of a dinner plate and poops a lot and smells really bad. You need to clean the tank out constantly. So, before you even buy a turtle or take one on just think of the commitment you're undertaking. But yeah, if you don't want it anymore, you know it's hard because there are so many out there that rehoming, trying to find someone else to take care of your turtle and rehome it... There are some places that will take them off your hands, but again there's so many people who are kind of keen to dump their turtles that there's just not a lot of places to put them this point in time. So, that part is a broader conversation on rethinking the pet industry also and whether things like freshwater turtles should even be there in the first place because they're very complicated as pets and then become an environmental crisis after the fact.

Saintsing: So, then on the science you're actually doing. So, you talked about removing the red-eared sliders from the area. Did you actually see them... Do they interact? Do you watch them interact with the native turtles?

Lambert: Oh, yeah. For sure, they interact. I mean, but the kind of funny conundrum we have is that there's some kind of observational work from lab experiments that sliders are pretty aggressive kind of biting beasts. And people have done this work in Europe or something on how invasions hurt native species, looking at how the sliders kind of fight them where they are the aggressors. This kind of funny counterintuitive thing with the western pond turtle, it's a grumpy butt, and they don't really like being near any other turtle, even turtles of the same species or other ones. They try to avoid you know being near other turtles at all costs, and occasionally when we've actually watched western pond turtles, the native species, out there basking, doing whatever the turtles do, and a slider comes by, it's usually the pond turtle that's actually the aggressor towards the slider. Around... the other way around. And so, kind of by being more like an indifferent blob, the sliders do better because they're okay just kind of hanging out and being aggressed and being on, you know, little piles of turtles. But yeah, they'll you know they'll bite at each other. They'll kind of shove each other off of basking logs. You know basking may sound silly, but basking is really important for turtles, which are ectotherms. They need to basically take in sunlight to be able to kill parasites and get their metabolism working so they can become sexually active or to digest their foods, things of that sort. So, when they're abandoning their basking environments, they're actually taking a pretty big metabolic hit. So, yeah they do a lot of biting and pushing, which seems very un-turtle-like, but it is very much turtle-like.

Saintsing: So, you're saying the western pond turtles, they don't like hanging out with other turtles. So, I've been to Jewel Lake, and I've seen like, you know, there'll like be the log, turtles all out. Are those generally going to be red-eared sliders because they're kind of all close to each other or...?

Lambert: It really is a mix. I mean the challenge we have with a lot of... one, Jewel Lake's not a natural body of water. It used to be a creek that's been kind of dammed, which is why it's a pond or a lake now. But there isn't really other basking habitat there, so they don't have a choice. If they want to bask, they have to kind of be clumped together on that log. If you put out a bunch more logs, those turtles would immediately spread out. So, when they're given no other choice because the density of turtles is really high or there's nowhere else to bask, you're going to see them basking side by side. But yeah, if you go to Jewel Lake, you'll see a mixture of turtles. Some will be sliders, some native western pond turtles. You know, a grad student in Environmental Science, Policy and Management at Berkeley, Robin Lopez, has some great pictures of western pond turtles on that log. So, they will be there.

Saintsing: And then, so you said you did find evidence that the western pond turtle was kind of doing better, thriving when you removed the red-eared slider, but that was up in UC Davis. So, did you find the same thing here at Jewel Lake?

Lambert: Yeah, unfortunately, we didn't actually get to finish that project, not fully yet. We're hoping to over the next few years. We actually did a really big pivot last year and

changed the research, and only what.... You know, it wasn't even the pandemic that caused that. We, part... There are other studies site that we're doing, replicating this experiment. I was in Santa Cruz, and we discovered a new disease impacting the pond turtles down there. And it's scary because where I am up here now, in Washington, that, the same disease has completely shut off conservation for the species because it basically rots the shell on the animals and works the way down to the body cavity. Bone, shell is very important for turtles. It keeps them free from pathogens and also getting eaten, so having it rot away is not great. And finding this disease, the pathogen down in Santa Cruz had me, completely shifted what I was doing to seeing if that disease is more prevalent in more places in the Bay Area, how bad it actually was. And so, we collected the data we need to for kind of a preliminary kind of status assessment, how the sliders and pond turtles are doing. And we never kind of got around to that a bigger part of that experiment. Maybe one day we will. We're hoping to over the next few years, but the disease kind of took priority.

Saintsing: And you know the disease? Like you know the pathogen for the disease?

Lambert: So, yeah. It's a pathogen called *Emydomyces testavorans* fungus.

Saintsing: Yeah, that sounds unpleasant. Is it affecting all the turtles like? Or just the western pond turtle? Is it affecting both the red eared slider and the western pond turtle?

Lambert: You know, the crazy thing was this... We knew the disease, we knew the disease before you knew the pathogen, which is not surprising. That's usually how it goes, right? You have to watch this disease for about 10 years now, and the pathogen was only just described to science in late 2019, like three months before COVID happened, because fungi are really hard. No one funds wildlife diseases. Yadda, yadda. It has a whole variety of problems with it. And so, we know that we have pathogens here, you know? There is disease in western pond turtles. We were finding the pathogen. On sliders, for instance, they don't seem to be diseased the same way that the western pond turtles do. And so, it does assume that the sliders can be a reservoir and be infected by this pathogen but not really be succumbing to its impacts. There are other species of turtle across the us that are closely related to the western pond turtle that are also endangered species, that we are now fighting this disease in. New things like terrapins out in North Carolina, to the more endangered species of the Michigan area. So, this pathogen and disease is spreading, it seems like, away from the west coast, as pathogens do, which is unfortunate. And so, it does infect, affecting some species of turtle, but not all species of turtle in the same way.

Saintsing: So, another reason to not release turtles because you never know what diseases you're spreading.

Lambert: Yeah, don't let them go. Keep them inside.

Saintsing: Yeah, but so turtles aren't even the main thing that you study is what you're saying. You or at least your grad student studies and your postdoc studies were kind of not focused on turtles.

Lambert: Not at all. Turtles before you know have been kind of my side project for my entire career. Most of my works are focused on urban frogs largely and how frogs that live in our cities are impacted by pollution and water quality more generally. So, that's really been my focus for a good long time.

Saintsing: And you're still doing that? You're still focused on frogs?

Lambert: Frogs among other things. So, my current job has been working on, you know, frogs, endangered salmon, mussels, you name it. If it's in the water, we probably are studying it.

Saintsing: I don't really... I never had to do field work much, but I'm assuming you know you kind of got to focus on a thing when you're doing field work, or are you... it's like... what is fieldwork for you? Like when you're like studying so many different organisms at once? Do you do multiple collections in one go? Or are you like doing multiple different field seasons? What's going on?

Lambert: Yeah, so it... When it was my grad work and my postdoc time, the field seasons for frogs and for turtles, for instance, are oftentimes at differing, different parts of the year. So, the frogs I worked with typically breed and are active in kind of a late winter, early spring time. So, water is still very cold, especially in Portland. So, I'm wearing like four layers, in neoprene gloves because I'm frigid. And you know, by the time that kind of tapers off is when it becomes turtle season. So, I kind of have an extended, you know, field season from like February-ish until July, August. I'm doing kind of two different projects. And then I have fall and winter to analyze data and write things up and things of that sort, which worked really well for my PhD and my postdoc time. Postdoc was weird because COVID threw everything into chaos, but such is life, you know? Currently, I work for the state of Washington as a senior scientist, which means that I manage people, so the amount of fieldwork I actually do is like 10 days out of the year, for fun. Or just kind of see sites. But it's usually mostly my team, people that are doing the bulk of the work.

Saintsing: Do you... Are you sad about that or...?

Lambert: I mean it depends on the day, for sure. I mean when you have people out there seeing really cool critters and just being, you know, being able to hike, you know, glorious forests or being out there on a boat in Puget Sound, it's hard to empathize with any sort of misery they may have. I watch stuff in front of the computer all day crunching numbers and writing things up, but it also is great because I get to spend a lot of time, you know, putting together really important projects that can influence management

policy. I still get to do a ton of science every day. A lot of this is, you know, designing studies and analyzing data. So, I get to do that kind of fun side of things as well.

Saintsing: Yeah, it sounds kind of like you're kind of in a position as an academic PI, but not teaching. I don't know, is that kind of like how you would describe your job?

Lambert: There are a lot of analogous pieces to being, you know, a faculty member. There's no, yeah, there's no teaching. I still actually work with undergraduates. I have a few undergraduates at UC Berkeley. I'm still working with a few projects we assumed, a couple times a week on various projects. We're working on papers and measuring museum specimens and things of that sort. I actually have a doctoral student at Portland State University who has an NSF-funded internship with me, so about half her time is spent for her PhD for this year working on state-funded research, which is pretty cool. So, I get to work with students still, both undergraduate and graduate students. But yeah, it's basically writing grants, writing papers. Funding, you know, people to go out there and have their own salaries and collect data, designing studies of various sorts. So, it... there are a lot of analogous situations to basically being a faculty member.

Saintsing: Beyond not teaching, what are like the key differences you would say?

Lambert: A lot of my meetings these days are managing my folks who should do the research, which is not different from an academic setting per se, except that you know being a lab meeting, you're kind of working with students who are kind of actively learning. And we're all actively learning all the time forever, right? But you know, students, whether an undergraduate or graduate student, are learning tons of new skills at the kind of cutting edge of skills and trying to apply that and putting together their own, their own kind of independent research project. That's not quite what I do. When I meet with my folks, you know, we have a set of projects. Sometimes, they're probably like 15 years that we're kind of updating or tweaking, like long term experiments that are really kind of beyond a lot of what academics can do because it's not really how funding cycles work for a lot of universities. And so, a lot of a lot of it's kind of logistics-based meetings and things of that sort, more so, than maybe would be in sort of a lab setting. So, that's one thing. And then, you know, I know a lot of faculty have like administrative meetings where they're figuring out how to run departments or things of that sort. And I end up in meetings or I'm talking to the head of the agency or head of the department and figuring out how the science might influence a policy decision or management decision, which is a completely different kind of part of your brain to use because you're not only translating statistics and p-values and kind of experimental design limitations but also kind of how good this study design might be to someone who may have zero familiarity with studies and research. But also saying here's how you can take this one like sound bite from this pile of research and do something with it functionally. That's been a big challenge. Really rewarding also because you've got some really interesting conversations that actually can change what people do in the world.

Saintsing: Yeah, for sure. And I mean you, you've been doing this, you said, since March. So, still relatively early in it. But do you talk to like politicians? Or do you mostly talk to like people more in a position like you are, not elected?

Lambert: Yeah, so throughout kind of my graduate and postdoc career, I did, you know, I had talked to politicians a handful of times for a variety of reasons. Kind of, you know, pitching them on... You bring some science into their policy, or taking kind of a stronger stance on actually turtles and pet trades and things... That sort of trying to, you know, have a little stricter impact, regulation, things like pollution. So, I had talked to politicians, which is easier to do in some ways for an academic because you don't necessarily... It's a lot harder to talk to politicians when you're a government-funded scientist in some ways. But through my graduate career, I also spoke with a variety of managers from local, you know, regional East Bay habitat managers to state and federal folks who manage wildlife and habitat. So, that's been a big part of my career is having those kind of conversations. And oftentimes, those folks have some degree of science background. So, the translation is not as strong I think actually being embedded in an agency. You have a lot more opportunities to engage with people who are making bigger decisions who may not have a science background the same way that for sure people who have PhDs do. But they may have been many, many years removed from their undergrad days taking a you know biology class or something like that.

Saintsing: So, like what happens to reports you generate? Are you... As an agency, you generate like the science about what's happening with the frogs, what's happening with the turtles, and then it just kind of has to go somewhere where it can be acted on by a legislative body? Or you're in an agency maybe where you can change things depending on what you find in the science?

Lambert: Oh, it really kind of depends on the particular policy you might be influencing or management procedure you might be doing. You know we have a lot of people who for instance can permit the design of a dock that put over someone in someone's backyard, if they have a marine shoreline as part of their property. So, we, you know, the agency permits that. And so, the science that we can do, they're even doing literature reviews on the kind of best available science. Maybe we'll actually tweak the guidance we give to some of the parameters of the agency on what's okay or whether we should be more stringent in where we are choosing to like place that dock. Would placing it a little, like five feet left, would that be actually a little better for some of the kelp and things like that that grow there? Or is there really no way to mitigate the impact of dock? And kind of synthesizing the science on that to be actually very helpful for guiding people whose job is just a permit that. If that data is not synthesized in one kind of useful place for those people, they're kind of punting half the time, or they're using kind of really old science that are built into the original policy guidance. That's one way, and that requires not much in the way of changing policies and big sort of management guidance. And there are other things you can do that actually might feed into changing policies that are the outcomes of studies that are happening over the longer term. I obviously have been

there for such short periods of time that I haven't done that yet, but some of the work that we've been doing is actually leading that way. And Washington state's great. We have adaptive management built into some of our policy regulations, and so, if you are familiar with the idea of adaptive management, it's kind of what it sounds like, which is: you do some management, you see what happens, and then you adapt management to something a little differently if you could have learned something new along the way. So, science and policy are kind of, you know, intricately tied there. So, there are policy changes that the outcome of long-term experiments monitoring that we at the agency are part of, and that's, you know, directly impacting the way we do a lot of forestry and timber operations in Washington state, which is a big part of our landscape, is cutting trees in a relatively sustainable way, which benefits things like salmon which of course is very important in the northwest. Anyway, so those are kind of a couple of examples of how things happen, and they can do everything from just a couple small people changing things on the ground to entire policy changes.

Saintsing: So, how did you decide on moving in this direction after your postdoc?

Lambert: Honestly it was flexibility and serendipity. You know my partner and I for a whole variety kind of family and personal reasons, wanted to kind of stay in the northwest, northern California to Washington, to kind of be nearer family at this point in time in our lives. And when you kind of geographically constrain yourself, your professional options go down quite a bit. And so, I was pretty amenable to a variety of things: academic, private sector, or government. I was kind of looking at a whole variety of things. I just started applying to a couple different options. I actually had pretty good luck with a couple academic interviews that didn't work out for a couple of reasons, one of which was COVID actually cancelled one of those jobs, which is unfortunate, but you know... It was... I think it was a December of last year, of 2020, this job opened up at the Washington Department of Fish and Wildlife. It seemed great. Managing a good team of people, leading a whole variety of aquatic habitat studies, and basically being able to guide a pile of research going forward seemed like an exciting opportunity. So, I threw my name in the hat for that, loved the interviews. I had two rounds of interviews, which actually felt very academic-y in that you had kind of a first round of a couple hour phone interview sort of thing. And then I did give a talk in the second interview and had to have a job-style talk and then get a bunch of questions. So, it all felt very comfortable in that academic sense, and everyone just seemed great. They seemed stoked on the questions I was asking for my postdoc and PhD times. They seemed like there was a lot of opportunities to collaborate and just do fun work. And so, I didn't even really hesitate. It just seemed like the opportunity to jump on it without thinking of, "Oh, my god, am I leaving academia? That's gonna be terrible." And as of now, I don't regret it.

Saintsing: How did you decide to do the postdoc after grad school?

Lambert: Just a lot of exciting opportunities to... My first year at Berkeley I actually was on NSF with my postdoc advisor, Erica Rosenblum... and I'd been talking to Professor

Rosenblum for a couple years during my PhD before I even finished it. Her work is just, you know, gets me really excited. She has a variety of kind of very applied conservation projects and some very kind of fundamental biology evolutionary experiments of her work. I had an opportunity to do some whole genome sequencing analysis for a year on her NSF funding. Learned a ton of new skills working with her, and just loved working with her in her lab group. They're just phenomenal. And then I got a Smith Fellowship through the Society for Conservation Biology, which kept me on for two more years. That was where I was working on kind of my own independent projects on urban pollution up in the Portland and Seattle areas in the northwest, and that got me a... You know, if you're not in the conservation biology world, a Smith Fellowship is a really great opportunity because it forces you to have mentors who are in academia and in practice. And so, they really balance the idea of doing science that kind of is immediately tractable for some outcome for conservation. It's not to negate the value of fundamental research, not at all, but the fellowship kind of gives you the opportunity to basically be embedded with an agency or some sort of other private nonprofit or NGO and have them be active collaborators or contributors to your research. Which is very uncommon for, you know, PhD students to be able to do. And I just loved it. I had a really great time for my postdoc, doing that kind of work. And Berkeley is a great place to do it. Erica Roseblum's lab was fantastic for that. The department, ESPM, is also fantastic. I got to work in the Museum of Vertebrate Zoology. So, all of it was just a fantastic time for me to have two years to play with frogs and turtles and learn some new skills.

Saintsing: How did the PhD compare to the postdoc?

Lambert: You know, the postdoc was way more chill than a PhD. Yeah, I enjoyed my PhD. I had a great experience. I enjoyed my lab. I enjoyed my department and my university. It was, you know, I had a good time. But there still is the, I'm assuming it's this way for most people, but you know, when you have to go through your qualifying exams, then you need to defend your thesis, turn in the final thesis, there is like... these are very hard barriers that can seem daunting or insurmountable or just kind of overwhelming a lot of times. And I think there's... a postdoc has a different kind of stress, but you don't have the same kind of stress. It's a lot more laid back. I guess this is a bit biased because two years of my funding came from a fellowship which is very independent, but you basically like kind of do whatever you want on a given day and just do science that you are stoked on for your postdoc time. And I was stoked on my science for my PhD for sure, but those kinds of hurdles that were definitely on the landscape or different kind of stress and kind of anxiety inducing sort of thing. I think that the other big part that is different from a grad school to a postdoc, for me at least, was a PhD is longer period of time. I feel like you have — maybe it's enough to hang yourself with, but — you know, time to learn a lot more new skills, right? You can just do a deep dive from the literature, and just read the papers and learn the skill or that skill as you need to. A postdoc when you start it is, you know, anywhere from one year to three years if you're really lucky, which is in no time at all. And basically as soon as you hit the ground, you're basically looking for your next thing, which can be a faculty job or another postdoc. Because you know a funding

cycle is a year away at a point in time, so you're always looking for the next thing. And so, your brains in a thousand directions trying to find, not just like a new skill, but this is a new job basically right away. So that's definitely its own kind of stress and anxiety.

Saintsing: Do you feel that your PhD has had more impact on you as like a scientist or your postdoc? Or they're kind of equal, you're taking different things away from them?

Lambert: Well, that's an interesting question. I think there's a very, very different... it's kind of hard to compare what's had more or less impact, you know? I think you have a little bit of a, when you're a postdoc, a little more of a leadership role than you might as a graduate student, because you have some hypothetically, some degree of wisdom or experience to pass on to the students who are you know in your current lab when you're a postdoc. And so, I think you feel, you know, if there is a hierarchy, if you believe that within a lab structure, you're kind of a little higher up in the hierarchy. And so, you can have a little more influence that way. I think my PhD gave me a lot more time to think broadly than my postdoc did because I had a lot more of that time and you're forming questions and so you're kind of you know throwing you know lines in different, different ways. Trying to figure out what you actually want to do for your PhD, and so, you're just taking in tons of information and trying, you know, developing a pile of questions. Which you certainly do for your postdoc, but I think when I was doing a postdoc at Berkeley, there's a couple of scenarios we had where I got to do these really amazing deep dives with my lab group and some other folks and just really get to have a strong collaboration for multiple months at a time. So, for one, for even a year, it just, I think allowed me to learn and get better skills at thinking critically. And like as a team, critiquing, like internally critiquing something and making a kind of finished product that was super constructive for our broader community. And I think having that sort of deep dive in my postdoc like as a really formal demand I think actually has been helpful to me for my position so far in government because sometimes you have to just really synthesize information real fast for the group of people. And figuring out how to kind of iteratively do that in a short time frame was very valuable for my postdoc time. So, yeah I think, you know, broad thinking from a PhD time, a little more narrow, but deep dive for work for my postdoc. Both prepared me in very different kind of ways.

Saintsing: If I asked you what you did science-wise at your PhD, what would be your go-to answer for that?

Lambert: My PhD, the kind of conclusion of it was that it completely undid my master's, which is totally wild. So, there's a whole group of pollutants out there known as estrogen-like chemicals that kind of get a lot of buzz, buzzwords in the media. A lot that impact hormone regulation, and we originally thought we were finding a pile of these chemicals in urban areas that are causing frogs to switch sex. And hypothetically frogs are not supposed to switch sex. If you're on the radio you can't see me with quotes over that word. By the conclusion of my PhD, I developed some new molecular tools and a bunch of really intensive surveys and experiments and found that frogs just switch sex naturally

all over the place in the middle of the most pristine uncontaminated places. And you know, genetic males turn to females. Genetic females turn to males. Doing it everywhere, equal frequencies, and there is no relationship at all with, you know, the amount of pollution or urban development that causes it to happen. And so, it's a really kind of interesting switch and mindset of these pollutants are causing frogs to switch sex to frog switch sex, so that's totally cool and natural. I think that's a pretty cool way to end my PhD is undoing my previous work in my master's with a really kind of broader and more inclusive understanding of biodiversity than we, you know, knew about five years before.

Saintsing: Were you happy that you were undoing it at the time or...?

Lambert: I don't think, you know... I think as I was learning this, I don't think I was happy or unhappy. I think it was just cool to have had started with something like that worked one way and then realized it works completely different kind of way. And feel pretty confident in that answer that you weren't messing it up, but then you know, by biology surprises you.

Saintsing: I don't know... was it like hard to change your mindset or like let the data change your mindset? Were you like, "No," and then like, "I need more data?" Like how hard was it for that to happen?

Lambert: Yeah, this is a broader conversation, but I actually, throughout my PhD, engaged a lot more with the social sciences. So, science technology studies, history of science, feminist and queer studies which you think... A lot of people actually have a broader perspective on the natural science that I was doing, so that I became no longer surprised, because you know, you're able to kind of realize that sometimes the frameworks we have in science can constrain the way you approach research. And to be able to kind of take insights from the humanities and social sciences, it allowed me to have a broader perspective of what I expected, or you know told me to not even have expectations. Let the frogs tell me what they wanted to tell me. And so, I think I was jazzed to learn something new at that point in time.

Saintsing: As we end the interview, is there anything you'd like to leave us with before we go?

Lambert: Enjoy your PhD. Even if there's other stressors, how cool is that: you get five years to sit there and learn and make new knowledge for others to learn from down the road. If you know, if it is not what you're enjoying, maybe don't try like trudging on, but it should be something you enjoy and love because it's really cool. You can be paid there to learn. There are a lot of barriers for a lot of folks. I definitely can recognize that, but as much as possible try to enjoy that. If you need to find something else in life to kind of keep you floating, whether that's, you know, going to the gym or going for hikes or, you know, joining a band, do that, too, to you know be a whole person. But hopefully you enjoy your PhD. It should be a fun time.

Saintsing: Today, I was speaking with Max Lambert, who was a postdoc here at Berkeley, but is now working as a senior scientist at the Washington Department of Fish and Wildlife. Thanks for being on the show, Max.

Lambert: Thank you.

Saintsing: Tune in in two weeks for the next episode of The Graduates.