Transcript

Speaker 1: You're tuned in to 90.7 FM, k a l x, Berkeley. My name is Tesla Munson and this is the graduates, the interview talk show where I speak with UC Berkeley graduate students about their work here on campus and around the world. Today I'm joined by spider biologist Aaron brand from the Department of Environmental Science Policy and management. Yeah, I got it right. [inaudible] that's what we call it. It makes it easier. Welcome Aaron. Thanks for being here. Thanks Tesla. And Yeah, I've, this is my first time having a spider biologist on the show. I think that's pretty cool. [00:00:30] Can you tell us, I mean, does that mean exactly what it sounds like?

Speaker 2: Pretty much. Um, spiders are really interesting because they do a lot of interesting things and they're super diverse. So a spider biologist can actually study a lot of different things and still study spiders. Which part of the spider or do you study? So I mostly study their behavior, so I study how they interact with each other and interact with other animals. And I also study sort of their evolution and communication as well.

Speaker 1: Is there a lot of variation in like spider behavior or, I mean, [00:01:00] you know, sometimes I just think of a spider. It's got eight legs, right? And that's all I think about spiders. But is there variation in there?

Speaker 2: There's an enormous amount of variation. So there's, I think about 40,000 species of spiders so far described. And just to give an example of how diverse they can be, there are spiders that build webs that everyone's familiar with, but there are enormous groups of spiders that don't build webs at all. So there are spiders that will stock their PRI. All spiders are predators, but there are some that will stock their prey. There are some [00:01:30] that will sit and wait for prey to wander by and then they'll attack it. There are spiders that will fish, there are spiders that will throw a net around their prey and then their spiders who will use webs and they use them. And all sorts of interesting ways too. So that's just an example of the diversity you can get in spiders.

Speaker 1: So the web that as we know it is mostly just to get food

Speaker 2: for the most part. Yeah. But actually there's a really interesting way that they also use the web and spiders. They use webs. The males use them as a way to communicate with the females in a way to court. [00:02:00] So the male will climb onto the females web and they'll pluck it like a guitar string and the vibrations will get sent to the female. She'll listen to those vibrations with ears that she has in her legs and she'll decide whether she likes that mail or not years

Speaker 1: that she has in her legs. Okay. You've already like blown my mind a bunch with spiders. I do have to ask. I, you know, so I had someone on the show, uh, who worked on spiders

and islands and they mentioned like them floating through the air to get to the island. So is the thing that we see in babe with Charlotte, [00:02:30] like when they make their little parachutes and they fly off into the air, is that a real thing that spiders can do? Yeah,

Speaker 2: that's totally a real thing. And there are something that scientists like to call Ariel plankton. So there are basically, there's stuff up in the certain, not upper atmosphere but kind of in the middle. And a large proportion of the aerial plankton is actually baby spiders that have gotten up into the upper reaches of the atmosphere and they're just floating around and then they'll settle down. So many species of spider do this. When [00:03:00] you say upper atmosphere, how, I mean we're talking pretty high up there, right? Fairly high to the point where, um, to collect it Plainsville can have nets to collect it. So there's just like a whole cloud of little spiders up there. Wow. And they can survive that and then they can come back down and they're fine. Yeah. For the most part it seems like baby spiders when they hatch sort of have stores, food stores inside of them that they can live on for awhile until they land and find a good spot to set up a web.

Speaker 2: Okay. So we learned that spiders can or cannot make webs, depends [00:03:30] on their strategy. And they also have lots of babies. Like we're talking more than dogs. It depends on the species again. So the spiders that, the very large garden spiders that everyone's seeing this time of year, they'll have about maybe 100 to 200 babies in their egg sack. The spiders that I study, which are little jumping spiders that don't make webs, we'll have somewhere between maybe four and 20 in an exec. So there's a wide degree of variation. The large web spiders that live in southern United States can [00:04:00] have upwards of a thousand. So how does that work? If they have like a thousand children, they can feed them all, right? No, no, definitely not. And oftentimes the mothers don't provide any care at all. In the case of many web spiders, they will die right after they lay their exec because winter comes and they only live one year.

Speaker 2: In other cases, the females will still be around, but the baby's as soon as they actually get away as quickly as possible with one really interesting exception, and that is [00:04:30] the wolf spiders. So Wolf spiders are large spiders that you often see crawling around on the ground. Outside. They're big. They're little scary looking. They've got big eyes in the front of their head and they actually make a little egg sack and then they attach it to the back of their abdomen. They attach it to their butt and then they just carry it around with them. And then when the babies hatch out, the babies crawl up onto the mom's back and they hang out for a couple of weeks just on the moms back until they're big enough to go free and go off on their own man. Okay. So we've already learned a lot [00:05:00] of things that make spiders different from other animals.

Speaker 2: What are some other uniquely spider attributes? So spiders have several unique characteristics that distinguish them from other things like insects. Spiders are not insects. They're not, they're not. Oh wait, we got to start with that. Tell me more about that. They're not I, you know, I mean I studied biology, but clearly I know nothing about

entomology or insects or Arachnids like, cause I just assumed that spiders were insects. But clearly I'm wrong. Technically I'm not an entomologist. [00:05:30] Technically, I'm an IRAC knowledgist for someone who studies Arachnids. So their insects interactives are too, it's a very old distinction between the groups. They diverted a very long time ago and spiders have two body parts instead of three they have the cephalic thorax, which is like the head and the chest parts mushed together and then an abdomen. Whereas intax have head thorax, abdomen spiders have eight legs in six, half six and Arachnids in general, which include spiders, [00:06:00] Scorpions, Mites, ticks.

Speaker 2: I'm missing some major ones, I'm sure. Uh, but it's uh, I think there's probably about 12 different groups of Arachnids. They all have these characteristics in common with each other and not insects. And specifically spiders all have silk. Even though they don't all spend webs, they use their self for lots of different things. So sometimes they just attached it as little draglines so they don't fall down on their hopping around. They use it to wrap their eggs in those sorts of things. The spiders also all have venom. [00:06:30] So every single spider has little fangs that they use to eat their prey and they produce chemicals that help sort of take down the prey or kill them or paralyze them. But very small insect prey. Yeah. Okay. So you say that spiders and insects diverged a long time ago. Do you know how long ago we're talking about?

Speaker 2: Not off hand. Not off hand, but probably pretty long time ago. Yeah. What about those? I know sometimes people compare like some crustaceans to spiders, but they're just, they just [00:07:00] kind of have a similar body plan. They're not unrelated, right? Like shrimps and stuff? No, I don't. I would have to remember from my claws, no, not the calls. Never. But the, yeah, they diverge, uh, a long time ago from Chris Station, you type things. They do kind of have convergently evolved similar body plans where a lot of crustaceans will have similar numbers of legs and their body plans are kind of similar, but there's some pretty important distinctions between them as well. And you also mentioned the silk. Do you know how do all [00:07:30] spiders make their silk from like the same materials? Is that why we call it silk? Yeah, they do so well. Yes and no.

Speaker 2: So they, they have this family of proteins called Spider Robbins, which is kind of a cool name and there's many different copies of this gene in. They're all a little bit different to make different kinds of silk. So different spiders will produce different types of silk. For instance, something like a tarantula will make one type of silk, something like the big garden spiders that you see in your backyard. We'll make seven types of silk and [00:08:00] the silk glands are in the back of the spider and they come out of little glands, little spigots called sit spinnerets and the spiders can decide which type of silk they're going to use for which purpose and many types of silk we'll go into making something as complex as a web. Okay, so when they made Spiderman, they clearly were not anatomically correct them because no, put this silicon is risks at the front, but you're saying it comes from the back?

Speaker 2: It comes from the back. So if you ever see a spider hanging down there hanging from their silk, I think that they should reduce Spiderman [00:08:30] so that he make seven different kinds of silk from different parts of his body and then he could just dug be kind of neat. I think it'd be pretty cool. Okay. One thing we haven't really mentioned yet are their eyes, but I know I is. Maybe that's cause it's similar to other insects, but they have like compared to humans, their eyes are very different and very cool. Right? So interestingly enough, spider eyes are interesting and different from something you're familiar with, but also very different from insects. So insects have what are called compound eyes where they have [00:09:00] many different lenses packed into one eye and they're very, very sensitive to movement. So that's why it's really hard to squish a fly because they can see you coming long before you can react fast enough to squish them.

Speaker 2: But spiders do not have compound eyes. They have simple eyes like we do. Basically. The structure is a little bit different, but it's more or less the same principle. It's like it's like a camera basically. And if you think of our eyes, our eyes can do a lot of different things so we can see color, we have depth perception, we can detect three dimensional objects, [00:09:30] we have peripheral vision, we can detect movement and the way a lot of spiders work, particularly spiders that can see very well like jumping spiders and those are the ones that I study. We'll divide all those functions up across multiple eyes so they have big eyes in the front that can see color and they can do depth perception. They have ones on the side that can't really do much except do motion and they have others that can do other functions.

Speaker 2: Okay, so before we get into your spider system, the jumping spiders, I should ask, [00:10:00] have you always been fascinated with spiders? It's an interesting question because I've thought about that a lot because I get asked that question a lot and growing up I was just kind of interested in everything, especially everything involved in biology. I was always interested in animals in particular. And then when I was doing my undergraduate in biology, I wanted to do research. I was interested in anything that anyone would give me. And this one biologist there said, I have this project and it involves spiders and we have information [00:10:30] about how the all of the spiders venom is. So the components of their venom and I need you to figure out, kind of go into the research, figure out how they're related related, and then we're going to put the venom information with that information.

Speaker 2: So it was kind of a simple computer type project. But I found that while I was doing that, I learned a whole lot about spiders and I became really interested in them. And then as I was kind of wrapping up my Undergrad, I thought, well I think I want to go to Grad school. What should I do? So well I know [00:11:00] a whole lot about spiders. Maybe we'll give that a try. And it's just kind of followed me ever since. So what do you think the most interesting thing about spiders is? Oh, that's a good question. I think the most interesting thing about spiders and in particular the ones I study are their courtship interactions. I think that's the most fun thing about my spiders. Okay. And those are the

jumping spiders or jumping spiders. So how do they get their name? Basically they jump to get around so they do not build webs and they, what they do is they attach a little bits of silk to the ground so [00:11:30] that they don't fall and it helps kind of guide them in the air and then they just hop from place to place. If you're just tuning in, you're listening to the graduates here on KLX Berkeley. My name is Tesla Monson. Today I'm speaking with spider biologist, Aaron brand telling us about her interest in spiders and all these cool facts about them. Okay. And this the jumping spider. And is that specific to one part of the United States? I know you do your here in the u s right,

Speaker 2: right. I'm jumping. Spiders are a big family. So spiders are kind of broadly broken up [00:12:00] into families. You have your, your orb weaving spiders and your jumping spiders and your [inaudible]. So jumping spiders are actually one of the largest families that have 5,000 species, I want to say. So they're, they're quite large and diverse. And the one specific genus that I work on has over a hundred species in it. So it's diverse in, they're found everywhere. There are a lot of them found in the United States, but they're found all over the world.

Speaker 1: Oh, okay. So you just work in the u s because that's where your field site is not cause that's only where those spiders can be found.

Speaker 2: Well the specific genus I work on is in North American [00:12:30] genus and they're the ones that have kind of had a rapid diversification. And the males in the different species all look super different and they have colorful faces and they do song and dance routines to attract the females. And they're all different between these very closely related species. So it's a really nice system for studying communication and evolution.

Speaker 1: So you definitely have mentioned courtship multiple times here at what, I mean why would a spider need to court another spider?

Speaker 2: Well, spiders are kind of interesting [00:13:00] in that they are, they tend to be solitary hunters with the exception of a couple very rare exceptions. All spiders live by themselves and they hunt for a living. So when it comes time to mate, because you have to meet in order to have babies, it's kind of a tricky little maneuver that they have to do because the males need to convince the females, not only that he's a sexy male, but also that he's not a snack. So in different groups of spiders, they've evolved [00:13:30] different sort of courtship displays, whether it's a visual, like my spiders will do a vibratory, so sending vibration to the ground, which my spiders also do. Or it can be things like pheromones laughed and chemicals or other sorts of techniques. But in spiders they tend to have careful courtship.

Speaker 1: So this would be the same as like a human who maybe lived in the woods all the time. And then you know, once a year on like fair day, he came out in his finest attire, put on his [00:14:00] best Cologne, trying to find women who would, might be interested in him. It's like a similar

Speaker 2: women who might be interested but also might want to eat him instead. So when you said snack you mean? You mean I need a literal snack for the females? So females tend, in my species anyways, females tend to be about twice the size of the males and they are trying to get nutrients to fulfill their reproductive role and to provide their eggs with food. And they have relatively few large eggs so they really need to eat a lot. And if they don't think that mail is would be a good father, he would definitely make a good dinner.

Speaker 1: [00:14:30] So how do they convince the female that they are not just a snack?

Speaker 2: So in my it, the group of spiders that I study, they do a combination of dancing. So they will wave their legs around and do all of these really interesting dance moves with various body parts. And they combine that with vibratory songs. So they sing to the female but they don't sing through the air like we're talking right now. It would be as if I was drumming on the table and you had your ear on the table. So we use specialized equipment to measure those vibrations and [00:15:00] then turn it into something that we can hear so we can analyze it.

Speaker 1: Why would singing and dancing though, why would I convince a female that the male was worthy?

Speaker 2: So we're not entirely sure actually how these complex signals evolved. And a lot of, a lot of the theory suggests that because all the species are so closely related, a lot of it is just to figure out that he's the right species. So all the different species have different colorations, different dances and different songs, but they're actually quite closely related. [00:15:30] So if a female makes a mistake, she might end up mating with the wrong male or mating with a bad male. So the signals convey information to the female that she can use to make her choice.

Speaker 1: And can we compare this to like really bright colored feathers and birds, for example? Yeah, I think that's a fair comparison. Okay. So jumping spiders, and I know you mentioned to me earlier before the interview that you've worked on fluorescence and spiders. So is that another type of visual [00:16:00] cue?

Speaker 2: Yeah, so it's a, it's a similar, I don't know that it's necessarily used in courtship. We don't actually know why they do this, but as part of my masters work in the lab where I was before they discovered that spider blood fluoresces and fluorescing is basically what happens if you have a black light poster and you shine a black light on it. Or if you go and play laser tag and the black lights illuminate your clothing if you're wearing white, like glows blue. So [00:16:30] all spiders have blood that will fluoresce when you shine black lights on it. And we're not exactly sure why. But a big part of my master's project was to categorize who does it and does it change across sexist and life stages. So do females Flores brighter than males? Do adults fluoresce more brightly than babies and then kind

of try to think through based on their ecology, whether this fluorescence would serve some kind of purpose to the lives of the spiders.

Speaker 1: And do [00:17:00] you have any, uh, answers for us? And I mean, are the females different than males in terms of fluorescents?

Speaker 2: So it depends on the species that you're looking at. But I was looking in crab spiders, so there's really cool looking spiders that are, tend to be white and they're found on flowers and they'll like grab bees out of the air. They're really neat. Um, we did find some differences between different sexism, life stages, so we don't know exactly what that means, but I think it's potentially potentially pretty interesting because things that we'll eat these spiders, like birds are also very visual. [00:17:30] So if there's some kind of extra fluorescent signal going on, is it tricking a bird? Is it telling a bird? No, don't eat me. It's difficult to say, but it's an interesting possibility.

Speaker 1: And you also mentioned to me that you had to develop new tools, uh, to work with fluorescence. What, what was that like? It was a, an interesting journey that

Speaker 2: I was able to take because before I went to graduate school, when you're taking science classes in high school and college, you sort of know what to expect and you have a lab [00:18:00] class and you're going to follow this sheet and do these steps and get a result at the end. But when you go to graduate school you kind of have a question and then figure it out on your own. So I think one of my first lessons was that scientific equipment is not necessarily expensive and it's not necessarily fancy looking. So oftentimes very good high quality scientific research can be done with something made out of duct tape at hot glue. And I was able to design some of those sorts of regs that ended up working really [00:18:30] well. So that was fun. Yeah, it sounds like a lot of fun. What about with your jumping spiders?

Speaker 2: What sort of equipment do you use for them? Cause that's in the field. You don't keep them in the lab? We do keep them in the lab. Most of the experiments that I do are in the lab. We do large collecting trips where we try to collect as many as we can. The spiders only live about one year and raising babies is a total nightmare. I'm trying to do that right now. So we can't really rely on keeping a colony. We kind of have to collect fresh ones every year. But in the lab we use kind of a combination of various sophisticated [00:19:00] equipment and some pretty low tech equipment. So we use what's called a laser doppler, Vibram hitter, which is a fancy name for a thing that basically shoots a laser down and it uses the doppler effect to detect when the surface is shaking or vibrating on very, very tiny scales.

Speaker 2: So it's developed for things like the auto industry. So they could put a point this thing at a car and figure out was the car vibrating at certain speeds. But we use that to listen to the songs of our spider and we use cameras to look at the dances and then [00:19:30] we get to design things like a lazy Susan so we can spend the whole thing around and get

a nice head on shot of the mail. So we have kind of a, an interesting combination of things that we get to use. What about when you're out in the field, how do you actually collect spiders? We collect spiders. How you suspect we might and that is with a vial in one hand and very keen eyesight. So we see a spider and we dropped down and we scoop it up and then rinse and repeat.

Speaker 2: If we have a good day we'll collect maybe 30 spiders if we have a bad day. [00:20:00] Well maybe collect too. So they're very cryptic. They're very small and you just kind of have to develop what we like to call our spider eyes. Nice. That's awesome. Cool. Cause spiders have cool eyes. Exactly what part of the U S is. So I do my work in Arizona, just south of Tucson in the Santa Rita mountains, which is beautiful. I felt this time of year I start looking forward to going back cause I go in the spring and it's the best field site I could imagine. And it's beautiful and the spiders are really fun. So it's not the worst [00:20:30] thing that maybe raising spiders in the lab is so difficult because that means you get to keep going back out there. Exactly. Yeah. Why is it that raising baby spiders is so hard? For whatever reason? The species that I work with, the babies just seem sort of delicate.

Speaker 2: They seem to die at really high rates. And I think in the field they're eating a very wide variety of different food. And in the lab that's sort of hard to replicate because we have to feed them live food, all spiders eat live food. So whatever we want to feed [00:21:00] them, we have to be able to keep in large amounts in a colony. So my lab is kind of not only a spider lab, it's turned into a bit of an insect zoo because I have all these different colonies of feeder insects that also need to be maintained. But I suspect that one of the difficulties is just, we can't get the kind of variety in their diet that they really need. Okay. So, uh, you know, field work, lab work, jumping spiders. I know that somewhere in our conversation, maybe before they interview, you mentioned temperature and that that's an important factor in your studies.

Speaker 2: Can [00:21:30] you elaborate on that about that a little bit? So spiders as well as all insects. Arthropods, things like fish, things like lizards can't regulate their own body temperature. So if for instance, mammals and birds, we do regulate our own body temperature. If you stick a thermometer under your tongue, it'll register something warmer than the ambient temperature. If you were to somehow stick a thermometer and a spider, it would measure pretty close to what the temperature is outside. So [00:22:00] because they can't regulate their own body temperature there by all of their body processes are sort of linked to whatever the temperature is outside. And when you have animals that live in the desert where the temperature fluctuates a lot, it's hot during the day and it's cold at night, you can imagine that those processes are going to vary a lot just based on temperature. And I'm interested in how does that impact things like their behavior and the choices that they make related to behavior.

Speaker 2: And that's kind of been the basis of my dissertation research. So yeah. What is your [00:22:30] exact dissertation question? So I'm basically interested in how broadly how

temperature affects mating behavior and jumping spiders. And is this related to climate change at all or just temperature in general? So it definitely has links to climate change. And I think, I think one of the misconceptions about climate change is that when the climate changes everything will be hotter. So just take whatever temperature does now and increase it. And that's not necessarily the case. So I think one of the things that scariest [00:23:00] about climate change is that it's very unpredictable and things will change in ways that we can't necessarily predict. So I think that understanding how different temperatures affect animals in different ways can give us hints as to how things might change in the future, even if it's not going to be in a really regular linear sort of way.

Speaker 2: And in terms of temperature effects on, on mating behaviors. That's, is that what you said? Is that the phrase you use? So what do you think [00:23:30] that they could be less reproductively fit or you know, they could make less or they could make more or just meet with the wrong and sex? Like what are some of the outcomes that could happen from fluctuating temperature? I think you just listed all of my hypothesis for my dissertation suite. Those are all talking about, um, yeah, so I'm, I'm looking at it sort of on a, a very narrow basis. How do males and females interact? I'm doing a very large raring experiment where I'm wearing babies at different temperatures and seeing how does that impact them as adults. Does that change the way [00:24:00] that they interact? And then I'm doing some really fun field experiments. Um, I don't consider myself much of a field biologist or I didn't before I would just collect animals, but I'm actually doing some measurements in the field, which is super fun.

Speaker 2: And I'm doing these studies where I am basically sitting in the desert and watching every spider that I see. And recording everything that spider does for 15 minutes. So I basically have a little voice recorder and I get to be a little spider Paparazzi and say the spider jumped the spiders [00:24:30] holding still do that for 15 minutes over however many hundreds of spiders that I can find. And I'm interested in combining that data with what the spider's doing with temperature data and other sorts of information to figure out are males interacting with the habitat in different ways than females? Are Immature spiders reacting with the habitat different than mature spiders and then you have to go back and listen to all of those recordings? Yes, yes I do. And that's why it takes us a long time to do our dissertations right. Along with an army of [00:25:00] undergraduates that are helping me.

Speaker 2: Yeah. So you use undergraduates in your work? Very much so. Undergrads? Yes. Yes. We work a lot with Berkeley undergrads. We have people who help with animal care and a lot of people who love helping take care of the spiders. A lot of pre-veterinary students like to do that because it's, they need a lot of animal care experience. And working with spiders is a little bit different. So we have some students that we'll end up talking to the spiders and they just, they really get attached to them. And we have other students who are helping me more with research type things, data analysis, data entry, [00:25:30] and we have students who are doing research projects of their own in the lab too. So do you

have any advice that you would recommend for students who are interested in maybe getting involved in spider biology for example?

Speaker 2: I think the easiest thing you can do is if you look on websites for different professors and you'll see something that you're interested in, you can always just send them an email. And typically what will happen in my experience is that professor will forward that email to a graduate student in their lab and the graduate student will contact you and talk [00:26:00] about different ways that you can get involved. And it can be as informal as something like just volunteering in a lab. There are other more formal research programs that are available depending on what your department you're in. And there's a lot of different options. And I think just kind of exploring and just putting yourself out there. If you show enthusiasm, someone will definitely take you on. What about for people who aren't students who are maybe past the age of going back to Berkeley Undergrad?

Speaker 2: Is there other ways that they can find out more about spiders or interact more with spiders? Oh sure. [00:26:30] I think spiders are great because they're everywhere and they're interesting and everyone sees them. Everyone has them in their house or in their backyard. And I think a fun way to start is just start figuring out what sort of spiders you have around. And a good way to do that is to collect them or even just take pictures. You can look online. So the bug guide website can be really fun for that. There's a sort of a fun community of amateur spider enthusiasts who will talk [00:27:00] about ideating spiders and argue over ideas and those sorts of things. And that can be a really fun way to start. Also, there's other resources on campus too, so the Ecig Museum of entomology will sometimes do identifications for people and run events on campus. Sometimes we do a lot of things on cal day. So Cal d is a really great time to come and see some of the insect collections and talk to some of the graduate students who do some of the entomology and spider research on campus. So there's that opportunity as well.

Speaker 1: So you mentioned, [00:27:30] you know, everybody has spiders in their backyard or maybe their house. What would you say to the many, many people that I'm sure are out there that are thinking, Ugh, spiders, I'm so scared of them or I don't like them or I don't want them in my house. Should we be scared of spiders?

Speaker 2: Well, I think the answer to that question is definitely no. You do not need to be scared of spiders. There are very few spiders that can hurt you at all in the world. There are two in the United States that are considered medically significant, and that would be the black widow [00:28:00] and the brown reckless. And just to head off any, any concern? There are no brown recklessness in California. There just aren't. So the big brown scary spider you're saying is not a brown reckless. It's something else. Black widows we have around here for sure. They tend to be in the outsides of buildings and they pretty much just keep to themselves. But definitely don't be afraid of spiders. I totally understand. If you don't want them in your house, I personally just leave them baby because they eat things like mosquitoes and mas, but if you want to put them outside the old glass tumbler [00:28:30] and a magazine trek for putting them outside works totally fine. If

you feel like you have to vacuum them up, that's totally fine too. I will not be offended as a spider biologist if you need to do that to be comfortable, but just know that nothing that's in your house is actually going to hurt you.

Speaker 1: No, that is very good to know. Very reassuring and believe it or not, we're like actually just about out of time here on the graduate. So I want to make sure and ask you, are there any other spider facts or spider myths that we should know about? Anything you know you want to put out in the air about spiders?

Speaker 2: [00:29:00] I guess just to reiterate that spiders are fascinating creatures and they're nothing to be afraid of and I think they have a lot of things that they can teach us. So if you, sometimes if you just sit and watch a spider on a web, it can be a really interesting experience. And to open your mind to, to what spiders have to offer.

Speaker 1: No, I, I'm with you all the way and as I was saying earlier, got a big huge garden spider and my garden right now. And every time I go down there to water I check it out and it's still there hanging out, [00:29:30] just, you know, live in it's life eating, it's eaten, it's things that it caught in its web and yeah, it's beautiful. So wow. Thank you for helping us understand spiders more so I think. Yeah, we're out of time here on the graduates. You've been listening to the graduates here on KLX Berkeley, 9.7 FM. The graduates is interview talk show where I speak with UC Berkeley graduate students about their work here on campus and around the world. My name is Tesla Monson. Today, I've been joined by spider biologist, Aaron Brandt from [inaudible], the department of Environmental Science Policy [00:30:00] and management. And she's been telling us about her work on spiders and specifically jumping spiders and how they court each other. So, uh, you know, find some ladies to come back with them and not eat them, hopefully, and also telling us just a lot of really interesting facts about spiders, including the fact that we should not be afraid of them. Uh, so that is always good to know. And thank you, Aaron, for coming on the show today. Thank you. As always, we'll be back in another two weeks with another episode. [00:30:30] Stay tuned. You listening to KLX.