A Californian's Guide to the Trees Among Us Transcript

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In Conversation with: Enrica Lovaglio Costello (ELC)
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[Music]

Karen Lauritsen (Moderator): Welcome to "Kennedy Library Out Loud", a series that features podcasts and videos of Cal Poly library events and exhibits. This podcast captures Conversations with Cal Poly Authors on February 3rd, 2012. Matt Ritter is an associate professor in the Biology Department at Cal Poly, San Luis Obispo. In 2011, Ritter wrote a guide book called A Californian's Guide to the Trees Among Us, which was published by Heyday. Ritter sat down for a conversation with Enrica Lovaglio Costello, an associate professor in the Digital Media, Art, and Design Department. Together they explored topics ranging from what trees to plant in California and why, how to photograph and design a guidebook for a wide audience, and which cities offer the best tree tourism.

MR: Thank you. [Applause] Thank you. Thanks for inviting us and thank you all for coming. It's an interesting format. And so, I will—Karen, tell me if get it wrong but we're going to talk for a little bit. I'll talk a little bit about some motivations behind writing the book, and the book itself. And then Enrica and I will talk a little bit about the book and questions you have. And then, any questions that you all have, any time, feel free to raise your hand and ask it and we'll actually make it a conversation rather than a lecture or something like that. Well, it's an exciting time for me. Because the book is—in fact, the book is doing well and it's selling well and people seem to like it, and you never know when you do something like this whether people like it or not. And I've got an opportunity to go around and talk to bunch different groups about the book, and also explain to people my motivation behind why would somebody write a book about the urban trees in California. That's what it is. It's a natural history guide to the trees that you would see in cities, towns that line the streets and parks and gardens and not necessary native plants in California or native trees in California but trees that we grow and trees that you see outside this window and on campus and in San Luis Obispo and throughout all of California. So I did a lot of travel in California. And I think I've visited actually every town in western California with the population over about 40,000 people. And I'll talk a little bit about that later, but it was an interesting journey in making the book. And some of the motivation behind writing the book has to do with—it first of all, some of you may have seen that this week or last week, there was a relatively large news story that came out. It was a large for me at least. Maybe you missed it but the U.S.D.A. released a new map of the United States which was the New Plant Hardiness Zone for the United States. I'm possibly alone and being the
only person that saw that but this—it was a big deal. And the reason why it was a big deal is that they had not released a map like that since—had it been 14 or 15 years previous, they released another map. And what the U.S.D.A. Plant Hardiness Zone Map is, it’s a map of the United States but it’s also—it can be zoomed in on and so on, and it shows places where you can grow certain plants and where you can't grow certain plants because it's too cold to grow those plants. And this is an example. I'm going to walk down here from my office. I had planted this little eucalyptus tree on campus eight years ago and it came into flower the first time this year and it was in flower right now. And this is eucalyptus caesia, the Silver Princess. You think of eucalyptus as being these big hulking nasty trees. And this, its mature height is about 8 feet and it makes these beautiful flowers and then this big white fruit that came after it. And it's a great little tree but it's from southwestern Australia, in places where it doesn't really get cold ever, and it doesn't ever freeze. And so you can grow this in San Luis Obispo. But if you try to grow it in San Francisco, in north of San Francisco, it's going to die and freeze because it's too cold there. And that's what this map is about. It informs people where you can grow certain plants. And the big deal about the map is that it's different in last 14 years. It's vastly different than it was 14 years ago, and all the hardiness zones have shifted northward. So plants that could not have been grown in certain places 14 years ago can now because we don't have the low temperatures that we used to have. And it's the first time that an organization like the U.S.D.A. has shown one of their maps that we are really facing global climate change and warming in general, and we’re seeing this in the horticultural world, in the plant world through this as well. In addition to that, 2008 was the first year that we have more urban people in the world than rural people. And about 70—about 1950, it was 70% rural population, human population and 30% urban populations. And that's been changing to a point where in 2008 the urban population of world surpassed the rural population. And that's projected to go out about 2050 where you're going to have about 70% of people are living in urban places. And in addition to that, we are—our planet is getting warmer and warmer, the population is getting more and more urban, at the same time we’re entering or we are fully in what most scientists are considering this sixth mass extinction on the planet where probably about 15 papers have come out, peer-reviewed scientific papers over the last four or five years, showing that our levels of extinction on the planet are about 100 times the levels that they were even a century ago. So, at the last mass extinction, the cretaceous, when all the dinosaurs went instinct, about 75% of species in the world went instinct. We're at that same rate now in the planet of species extinctions. So, the planet is getting warmer and warmer, the human population is getting more and more urban, and we’re facing mass extinction. And I see these things and I have for the 10 years of being here thinking, you know, what I am doing? What I am—is there anything that I should be doing or conveying to people to address these sort of, these large problems? And I don't know what the answer is to that, what you do. But I think it has something to do with natural history and it has to do stories about organisms and getting people to care. If you are in a group of people that care about things, you can make change. Most people are apathetic, no change is going to happen. So how do go from apathy to caring and sympathy about other organisms, or you tell stories and you learn about those organisms. And I was hoping that this book if it tells natural history about the organisms that are around us, the things you see on your street everyday, and you walk out. Now, all of sudden, you know the name of the tree and it's sort of hard to ignore that tree, that in some way knowing that sort of information and
knowing about the urban spaces and the plants we bring around us could be a gateway drug in some way, caring about plants in general and maybe organisms in general, and then ultimately, being a more sort of conservation-minded person. And, so that was one of the goals of the book and that it would be easy to use and somebody could out flip through and look at pretty pictures and look at and say, "Oh, that's the things that's in front of my house," and that's the name of it. This is where it from. This is why we grow it. This is the interesting things about it. And then what leads—what comes out of that is some kind of empathy, some kind of appreciation, some kind of caring for that and other things, and just paying attention to them. And then if everybody—you know, it's my dream that everybody in California owns one of these, but no chance to that, right? But, you know, if everybody has that attitude, we in California, we care more about the organisms and we care more about the natural history. And so, that was the goal. And like I said, I travel all over California and I talk to a lot of people about their attitude towards trees. There's a retired urban forester for the city of Modesto, a guy named Chuck Gillstrap [assumed spelling]. And I put a bunch of quotes throughout the book. And when I put from him, which is great that he says, "Without trees, a city is just a scab on the earth." And I like that quote because it really indicates what I think, it's now a truth is that it's the trees in our cities that are making those cities beautiful. The most beautiful neighborhood, the most charming neighborhood are not necessarily because of the houses, it's because of the beautiful trees that are around them. And I got an appreciation for that. When you go these beautiful neighborhood in town and you talk to people about their trees, and I really came to appreciate the fact as well that not everybody sees trees in the same way I do, they—not everybody appreciates them or loves them. And in California where we have no seasons, right, we don't—it's not acceptable I think for us to clean up after everything, anything. We don't shovel snow, we don't rake leaves. We don't do anything like that. And so, you know, when you tell somebody, look at this beautiful jacaranda tree on your street, in front of your yard, what's the very next thing they say to you always? “It's so messy.” Exactly. Yeah, the—it's so messy, the flowers drop on my car. And that's what they're thinking. So, I got very interested in that idea of why is this unacceptable to people, and why are they approaching trees in that way? And I actually brought an email that I wanted to share with you that indicates this, exactly. I'm going to read it out to you. It says, "Hi Dr. Ritter. I would like to plant a tree in my front yard and I want your help with tree selection. I like a tree that blooms nicely, doesn't grow big, doesn't drop any leaves, flowers or fruit. Thank you for your help." And that, you know, is typical. It's—and how do you respond to that is a good question that— [Inaudible Remark] Yeah, exactly. Yeah, it's a cellphone tower, I think, that's right. A fig tree. And so they're not messy at all, they won't drop anything, OK? And, you know, it's very interesting idea that we are, we're living with these organisms, really, they're making our cities beautiful, they're making our lives better in so many ways. And it's a constant battle and it's always political, tree removal. I'm the chair of the City of San Luis Obispo's tree committee. And so, anybody who wants to remove a large tree in town has to file for a permit for that. And that comes to our committee and we decide whether or not it's O.K. to remove a big healthy tree for certain reasons or so on, and every single time it's political and every single time it's brutal for everybody involved to go over the process of tree removal. And so it's a, it's an interesting thing with the trees in the urban spaces. And I got to tell some of those stories in the book. I wanted, I wanted to tell the story in the book of how people interact with trees and this idea of controversy and interest with trees. And I wrestle
with how to do that because I wanted to be a natural history guy not necessarily a literary treatment of people's attitudes toward trees. And so, the way I decided to do that was just on every page of the book to put some quote, some piece of famous writing by some famous person about a tree or some poignant thing that somebody had said about a tree at some point in time or an interesting thing. And I also thought it would be fun for people to flip through. Even if you don't care about trees, a lot of people care about quotes and little tidbits, and so, I thought to make it more flippable and look—and people can look at it. I'll read one to you right here. This is one of my favorites. "If trees could scream, would we be so cavalier about cutting them down? We might, if they screamed all the time for no good reason". [Laughter] It's a Deep Thoughts by Jack Handey. And, you know, it's a funny quote. But, you know, the other ones are more poignant and more interesting, maybe, maybe not. But I thought it would be an interesting way to tell the story of how people interact with trees, because the interaction even in urban spaces is massive with trees. And so, the book, I hope it helps people to learn more about the natural history of organisms that are around them. I think it's an important thing. It's a real problem that we're facing. David Orr, who is the Chair of the Environment Studies Department at Oberlin College, some of you may have remember he was invited to come here to campus a few years ago to give a talk, and he is a personal hero of mine but he has a great quote. He says that the average person recognizes more than 1,000 corporate logos but can identify fewer than 10 plants native to his or her locality. And that right there is an issue that we're all going to face. If people don't recognize the organisms around them, they don't know anything about them, they have no appreciation for them, and the saving of any organisms then will not happen, and conservation only comes on heels of appreciation. And so, what the book is about hopefully is a book that will be a key to people taking, that will help them with the first steps into the natural world through the urban environment and then when we need it the most, when more and more people are living in an urban environment, and then ultimately will help people appreciate and care more about the organisms around them. And so, that was the motivation behind the book and you never know if something like that is successful or not. But at least people are—some people are buying it.

ELC: Yeah.

MR: Yeah.

ELC: It seems like, from how many are sold, it seems like it is successful.

MR: So that was my introduction. That was my preamble, my ramble. Can we talk now? Is that O.K.? Yeah.

ELC: Can I ask you my questions since I’m here?


ELC: So I'm going to ask you a few questions about the book that I know really well and I always wondered when I'm flipping through them. And then some about your future, some bigger
questions past the book. The one about the book is I, as a designer, I was looking at every page knowing that you had story to tell on each tree in really one little page. So, question—maybe a big question is how did you decide, how did you even figure out the layout, the design, how did you determine how to tell that story in such a little space in a sense?

MR: Yeah. There's, well, there's two ways I want to answer that. And first was, it was very difficult to tell—to come up with a list of the trees that were in the book. That was the first thing that was one of the hardest. Anytime you do a book like this, there's going to be sacrifices that are made but I wanted anybody in any place with, within Western California on the side of the Sierra Nevada to be able to, in urban or suburban place, to be able to walk up to a tree and have about a 95 to 97% chance that that tree would be actually in the book. And knowing what tree would be there when they were out walking around, took me driving around all of California and looking at every tree that were—and driving on the streets saying that's that, that's that, that's that. And they say botanists make the worst drivers, right, yeah, [inaudible] make worse driver, I think, than botanist. But you're always looking and I was doing that and ultimately came up with a list which then I passed out to a whole huge group of people in California that look at trees as well with the two questions; what's on this list that shouldn't be there, what am I missing that's in your town that should be there? And came back with a list of about 150 to 200 trees. That's about how many are in—species, I should say—are in the book. And it's a pretty well-represented group of trees in California. You would think that California which is a huge amount of diversity would have more than 150 or so trees that make up all of our urban spaces, but it's not really true. The nursery industry and city foresters and landscape architects in general in California, are very conservative. Nobody wants to experiment with anything because it's risky. And so we end up with, got 150 trees used over and over and over again. In the book, I put a list based on surveys and based on looking at published lists of where—what cities are and which, and which trees and which cities are the 10 most commonly grown trees in California. And the winner is the Liquidambar, the sweetgum. There's more sweetgums growing in California than any other type of tree in California. As far north as Crescent City to as far south as to La Vista, the Liquidambar, you're going to find it on the streets of those towns. And why that is I'm not actually sure. I think it's because Liquidambar is one of the only trees in California that give us full color and people have some kind of romance and interest in full color and deciduous trees and, but nobody—there're so many other trees that give great full color and they're rare in California because—but nobody wants to try them because if you put all those on the plan, the plan may fail and you're responsible for replacing the trees and as a nursery person you don't grow trees that you're not going to be able to sell. And so, it's a cycle that's really hard to break. And what I want to with the book is occasionally put comments about other trees that we should possibly be growing. It's not really a book about where you should be growing, it's a book that's about what's here but I wanted to try break that cycle in some way. So, that's how I came up with the list of trees that are in there for each individual page. It was brutal, trying to, trying to reduce what you say about an entire species. [Inaudible Remark] Into one page. The ginkgo is a great example. The ginkgo has a history with humans that goes back for thousands and thousands of years, and has so many stories associated with it. And that aside, its biology is amazing and crazy and different than any other tree. And how do you tell all of that in a paragraph and then have a few photos there and so on.
And so, every page was like a little book in and of itself and I tried to cram as much information and do it all possible. And one of the first comments with publishers that is, yeah, you don't like white space on the page. Apparently because I had presented them with a design of every page and it was just full of information. And so, some of that got sacrificed. And I hope it's just enough, though, to get people interested and to show pictures of thing—there is the ginkgo page for instance. And I know you can't see all that well but from a distance you can tell that there is a bunch of different colors of the leaves at different times of the year. And I wanted to show things like that and show it graphically instead of showing it textually. And every—the top of every page starts with the same information about the tree; how tall they grow, whether they lose their leaves or they don't lose their leaves, and where they're from. And you can flip through very quickly and see those things. And hopefully, I was hoping that would help people with tree selection and so on. And then, also, the etymology of the scientific name and how to pronounce things. Ginkgo Biloba may not roll off your tongue but I put how to say it in everyone. It's just my opinion of how to say it, because, you know, nobody has been born speaking Latin for 2,000 years and so we all pretend like we know what we're saying but it's just opinion of how you're doing it. But ginkgo is—it comes from Chinese and it means silver apricot. And because the females make this seed that gets a silver bloom around it and makes it look sort of silvery and that seed is where the scientific name comes from. We have a bunch of ginkgos on this campus. We only have males on this campus. That's not actually entirely true. I planted two females out in the other side of the engineering building over there and sort of wash next to the highland road there. The grounds department wouldn't let me plant them anywhere near where anybody would be walking because the seeds are full of butyric acid which gives vomit and dog feces its special smell. And so—and they really stink when they fall, and they rot and so on. And if you plant one next to the entrance of a building, people step on it and they walk into the building and it's horrible. But we have females. You know, how you tell all of that in this little page is difficult. So the answer—the long answer to your question, well, I just gave a short answer, is it was hard.

ELC: The good news is—you to me—I went through your book as I was planting a tree in my backyard, instead of saying Dr. Ritter, what do you think? I went through this tree and went online. And I love the—I needed a small tree. I wanted a evergreen or deciduous. I could see it right away there was a perfect balance between the empty, you know, the negative and positive space, design-wise is beautifully clear and easy to read. That is what the book should be. So I'm really happy you made it. The other question I have is something, is part of my—the question was supported by the dedication at the beginning in which you talk about your brother, I believe because it's the same last name, helping you out figuring out how to photograph these trees. Because I know you do beautiful photography and I always wonder where did you learn? Can you tell us a few techniques or tips for ourselves when we're ready to photograph our own trees, maybe?

MR: Yeah. Yeah. I took every picture in the book. Every image, I took and I had control over where it would be on the page and so on. And that was one of the most difficult things about the book, and that's why it took so long, holding four years in my life to where being out looking at trees and taking pictures is because being in the right place at the right time to see the right
flower and so on is, was difficult. But then how do you put that photograph on the page? What I want to do is think parts of the trees that you would see at different times, the year floating in white space, and so then it wouldn't be—you wouldn't be distracted by anything else. And then on every page, some kind of picture of what a mature tree may look like. And I tried a lot of different things before asking my brother, you know I have a pride, you don't ask your family for any help. He's a professional photographer. And he finally said, you have to put together a white box. And so what I did was I put this huge white box together with 20 lights in it and the light coming from below and then I could put anything into it and take photographs of it and it would look like there was nothing around it, you would just see that thing only. And then I had to be in the right place at the right time to see the right trees at the right time of year and so on. And in the appendix of the book, I put where each photo of every tree was taken, and the street address. The publisher wouldn't let me actually put the street address so I had to put the corner of the street in the street because they didn't want—because there's a lot of houses in the book and so on and I had to delete all of the addresses of any of the houses. And I got some interesting photos. Actually, on the magnolia page, there's a picture of a house and there's domestic disturbance in progress. In the book, in the picture here, you can see two police officers on the porch of the house, and it's on, you got to look close, but it's there. And they're O.K. with that but they didn't want the address on the thing, you know? So I just did a lot of photography. I am the type of person—well, with my photography, I have a digital camera. I get to the right place at the right time where the light is right, and then I take a thousand photos and I throw away 999 of them until I see the one I like. And I know that's probably embarrassing to say in public but that's the way I do it. But I have no skills. I just, you know, try to take a bunch.

ELC: That's good. And now, do you gravitate more toward the entire tree or when you look at the tree somehow, your eye goes toward to the detail?

MR: Oh. I'm, you know, bell curve of normalcy of people and how they look at trees on the way out on the wrong end, right? Most people, when you look at a tree, look at the color and the size of it and so on, I go right for certain details because I want to tell the part and so on. So pictures of the whole tree and what it looks like, the size, and the color of it, and so on, but also a zoom in of the idiosyncrasies of the bark or esoteric information about the different types of flowers at different times of the year, something like that.

ELC: I could tell them by how much you love the microphotography going really close.

MR: Yeah.
ELC: I don't know if I bugged you about this when I was thinking of my tree for the yard, your favorite trees in California. Just give us a few, like a handful. I know you could go on for an hour and a half, but a handful.

MR: Yeah. Yeah, I have no favorite trees in California. There is a group of trees. They're all in the same species, which I think are incredibly impressive. And some of you may have seen some of these. They occur from about here south down to San Diego and they're planted trees. They're from Eastern Australia, from areas around Brisbane, the Moreton Bay. That's called the Moreton Bay fig. And some of the largest cultivated trees in California, if you're in Santa Barbara ever and you're next to the Amtrak station in Santa Barbara right of the freeway right there is a massive Moreton Bay fig. It's about 135 years old. And they have these huge buttressing roots. And their native habitat where it's more humid than in California that they actually get aerial roots that come down and they become these big additional trunks and so on. In California, what happens is the roots start and then they stop because it's too dry and they start again and stop. What you get is these things that look like dripping trunks that come down and stop in midair, and they're being an impressive trees. And in the book, I have a table there of California's notorious Moreton Bay figs because they're impressive. And there's one in Balboa Park that is really massive as well. There's one in Glendora. There's one in—there's a whole neighborhood of them in Santa Monica that, where they have torn the sidewalk apart and done crazy things to the sidewalk and push up entire portion of the streets and so on. And I think it's just a very interesting tree. So the Moreton Bay fig is one of my favorite ones. And I think being able to go around and look at all different, you know, the 10 or 15 biggest Moreton Bay figs is California is really fun trip to do and every one is impressive for one reason or another.

ELC: Talk about, since you mentioned a few cit—if I wanted to do a little tour of that the most interesting cities in California to see trees, which one would you recommend?

MR: That—yeah. Like I said, I've gone around and talked to other groups about the book and I get invited to come up for instance to the Western Horticultural Society in Palo Alto to talk about the book and they always want to know the question, "Is our city the best city for trees?" You know, it's hard. You always have to answer, yeah, you're the best. But the second best is—and, really, if you take couple things into account which cities have the most trees, the largest trees, and the biggest diversity of trees, the winner as far as I'm concerned is Claremont, California which is in the Inland Empire. It's where Harvey Mudd and the five colleges that is there. There're some kind of freaky convergence of all kinds of different factors that make Claremont being incredible place for trees that the, it's warm first of all. The—so you can grow anything there. The water table is high there, where it's a sort of alluvial soil, rich soil with a lot of water in it. So, there they have big huge trees like you can get in Sacramento, big arching trees over the streets, like elms and so on, but growing underneath them are all these beautiful tropical trees and they have a huge diversity. And so, there, Palo Alto, Sacramento for big huge trees, downtown Sacramento has some of the biggest trees in—cultivated trees in California. And then for just straight diversity, meaning that people grown everything and anything in San
Diego. Because in San Diego, you really can grow anything. As long as you're going to water it, it will grow there because it's just warm.

ELC: Yeah. Another thing that I'm really happy to—

MR: In San Luis Obispo, sorry. San Luis Obispo is the best.

ELC: I have to ask you because I don't know much of this particular topic. Political issues related to urban forests in California, can you give us some of those?

MR: Yeah, there are plenty. One I'm particularly interested in is, rich people have nicer treats. And that is true on a county level. It's true on a neighborhood level. It's true on a level of zip codes. If you look at the Los Angeles basin and you look at the different zip codes within the Los Angeles basin, and I'm working with some professors in the computer science department now to actually come up with some data to support this sort of anecdotal evidence that everybody has is that nicer neighborhoods with higher property values have better trees. If you look at those different areas of Los Angeles and you look at the mean income and their canopy cover in our urban spaces, they, as the mean income goes up, the canopy cover goes up. And why do wealthy people have better and more and larger trees and there is—when they're growing in the same environment? It's the same environment, it's just couple neighborhoods over, couple streets over, and the trees are much nicer. That's a political issue and it has to do with resource allocation, and it's something that I think if we can—what they're doing, the computer scientists are doing some amazing things so they can—they are involved with image recognition and you can—now you can go to any street in California basically and go on Google images and just look at the trees, right? From your desk, you can see any street and look at what tree is on it. For an image recognition software, you can tell does a tree exist at that address or not, so just yes or no questions. And then from looking above, you'd be able to recognize canopy how big is that tree. And so, and if you set a computer to doing that and give it time and it can tell you over the entirety of the Los Angeles basin, how many trees are in every neighborhood, how many trees are in every zip code, what size of the trees, what, and then you can correlate that to all kinds of political things. And so, if we can generate this data which I like to do, we are going to start a lot of controversy with it.

ELC: Yeah.

MR: So that's one thing I'm particularly interested in. Tree removal is very political as well. And it's just less interesting because it always has to do with that tree is unpopular for some economic reason usually, and then everybody comes up with all kinds of other reasons why it should be there. Safety, the safety card is always played with trees when people don't want a tree for some reason. I want to move my driveway from here to here but there happens to be a big beautiful tree here, and all of a sudden that tree becomes really dangerous when that's the case, you know? And the truth is everything is dangerous. It's up above your head, if you want to make that argument.
ELC: Yeah.

MR: Right? And people do make that argument a lot. And as the Chair of the Tree Community for San Luis Obispo, that argument is constant, that the thing is an immediate danger of falling. So what it's been, it's 80 years old and it could grow for another 200 years, for some reason right now it's really dangerous.

ELC: Yeah. And I'm going to ask you a little bit about your future, do you have—kind of more like a normal question then I'm going to ask you some wild question.

MR: O.K.

ELC: No long questions. Any other plants or books, future books—what's your future?

MR: I actually forget how hard this one was to write before thinking about writing another book, I think. Yeah, I need some kind of author amnesia. And I do enjoy the process of writing a book. It's a grind. There're some parts of it that are a grind and it takes the—where some famous author that when she was interviewed they said, and I can't remember her name, but she said what's your method for producing so much work that she did? And she said I use the A.I.C. method which is Ass in Chair method, you know, like she forces herself to sit down for a certain period everyday and write. And maybe you write a sentence that day, maybe you do well and you write more. But that kind of discipline, is hard to come by because—and, you know, it's faculty member, you're constantly being drawn in all kinds of directions, and so to save it you're going to sit down and write paragraph a day problem or some portion of this a day. I mean, if I really was honest about when this book was written, it was written from 6:00 to 7:30 a.m. and from 10:00 to midnight, because that's when I had time to sit down and think and write and so on. And so, I want to do that again because I love doing it. And I have other ideas, I think, who reads the book about plants, let alone trees, right? And so, the next book is going to be some kind of murder, sex novel with travel with it and so on, you know, and so somebody will actually read it and people will buy them. I don't know if that's actually true but I may have novel.

ELC: That's good. I cannot wait.

MR: Yeah.

ELC: Yeah.

MR: It may involve plants, but also [laughter] somebody getting murdered. It has to have somebody getting murdered and then travel.

ELC: Hopefully plants are there.

MR: Yeah.
ELC: They belong to you.

MR: Yeah.

ELC: So the crazy question is, because I'm a digital media person and as much as I love about keeping it on digital media, I wonder if you have any project—if you have the ability to do a project other than a book, no budget constraints, and will reach the masses, what would it be?

MR: A project having to do with anything, anything other than a new book, you're saying.

ELC: Yeah. It's not a book, it's something else. You know, it can be, you know, [inaudible] anything.

MR: Well, I really—I do—it's a question I haven't thought about, so I'm going to—I do like this idea of the interaction of computers and figuring out our vegetation. And I—this thing I'm talking about with computer scientists, it's on a shoestring. We can do a lot more. And I think if we had a big budget and we had a supercomputer do it very quickly that kind of thing, we could generate a lot of data from it. And I am very interested in that, knowing what grows where. You would be surprised how little we know about what we have and where it is. And that is, that's true of our cultivated plants. It's true of our native plants. One of my graduate students is just trying to figure out where are the rare plants in San Luis Obispo County. We have 250 species of plants in San Luis Obispo County, native species of plants. San Luis Obispo County has about 1,850 native species of plants, some massive amount. If you think about San Luis Obispo County, it's tiny. Alaska, the entire state of Alaska has 1,300 native species. We have more in San Luis Obispo County. And of those 1,850, 250 are federally endangered or at risk there considered threatened in some ways. So, 250 of those. Where are they? Where are they in the county you would think that you would, somebody would know that? The answer is we don't. And so, the way she and I are approaching that is to first of all go through every record than anybody is ever found of that and digitize it on using G.I.S. technology. And then you could look at a map of the county and say this plant occurs here, this plant occurs here, look these two overlap in this area. And you can find out where the hotspots are in San Luis Obispo County for all the rare plants. You'd be able to know that the more of a sandspit—and this is what it's actually looking like, because some of our preliminary results, is a place where there are more rare plants in the county than other places. And so, that thing needs to be protected, right? There are dangers associated with that. One would be African veldtgrass which is taking over whole huge areas of the dunes. We have to at least defend the sandspit, the peninsula from that grass, because there are more rare plants there than there are else in other places in the county and so on. And that has to do with time, computer, technology, and money to be able to come up with those answers. So, in a perfect world I could have whole think-tank trying to answer those big questions, where we have where is not, you know, not just San Luis Obispo County. What we have in California, California is the last publication of—we just came out with a new thing called the Jepson Manual which is a list of all the plants in California. The previous one is published in 1993 and it was just published in 2011. And I was one of the authors, David
Keil, in my department, is one of the authors, and there's about a hundred different scientists who are authors. And we figure out where—what is growing here. Nobody knows where they actually are, but it's an estimate. But about a third of all the plants in California, of these 7,000 plants in California are threatened, endangered, or rare in some way, a third of them. So it's a huge, huge issue. But if we don't know what we have and where it is, then things are going to disappear and we're not even going to know that those things are disappearing. We have records of plants that have been collected by Robert Hoover and other scientists and botanists in my department, where there it is sitting on their barium sheet, near barium and nobody's seen it since they collected that. So as far as we know, that's an extinct species and that's—and he collected it on Carrizo Plain in the 1950s and we've gone back to the site over and over and over again and haven't been able to find it. And that's how things go extinct, right. That's our records of those. We don't know, you know, extinct is not just there and that's gone. It's when was it last found and can we find it again, the answer is no. And so, but if we don't know what we have where those kinds of things are just going to go away. And so, that to me is important thing and for a future project that I could spend all the money in the world on, that would be a good—could make a difference.

ELC: Yeah. Two more questions, one is kind of—and we are the one that—you might have given us the answer already with the fig tree. I was thinking of Wall-E. I love animation. I used to teach animation. I totally love it. And in fact, there is one plant that is the survivor in the plant kingdom and it's what is going to give everybody hope for living back on earth. And so, if there was this one plant you could save, there was just one, and it was the Brazilian long living and all the good stuff, and somehow that could generate diversity if it was propagated, which one would it be?

MR: And we get to use it, too? Is that—could that be?

ELC: What do you mean use it?

MR: I mean, humans could depend on it?

ELC: Oh yeah. That's actually the—

MR: It's got to be a tree. Let's say it's a tree. A coconut.

ELC: A coconut.

MR: A coconut. Is that surprising?

ELC: Yeah.

MR: Coconut is the probably the most useful plant in the world. And they don't grow here, right, but they grow in saltwater. And you can get so much from a coconut. You get fiber. You get food. You get fresh water from saltwater. You get thatching. You get everything. And so,
you know, a coconut is a good example of plant that has a huge long history of humans and it's extremely—so such a long history of humans. There’s nobody actually who knows where a coconut is from. It's been moved around the world so long by humans that there is no record of where it was originally from. Now it just occurs in tropical areas everywhere, and there's no evidence that it was once from Asia or it was once from Polynesia or something like that. And it’s one of so many useful plants and plants that are—have a potential of colonizing new areas. That is a very difficult question to answer. If we only get one, there is no hope.

ELC: Yeah, I know.

MR: That something is crucial, remember. And it's also, if you go to Sweet Springs Nature Preserve, there's a little—and I recommend that you do it. It's beautiful and it's an amazing place. It's controversial lately, right, because of Sweet Springs. The Audubon want to remove all the eucalyptus there and the whole community also came out and did everything but tied themselves to the trees to stop them from doing that. And Sweet Springs, though, it has a freshwater pond that runs through a freshwater pond and then runs out into the estuary and runs out through the saltwater marsh there. And the freshwater area there, there's a little plant called Arenaria. I am not even sure if it has a common name. But that, it has propagated itself asexually, meaning clones have moved away from it by a couple cuttings that were planted there. And that plant as far as we know, there is that one individual that spread out there which was planted there from a population that got destroyed in Black Lake Canyon, and there is five other genetic individuals. You know, you can make cuttings but they're just clones, so five, five different genomes that exist in that species now. And the question that a lot of people have is if you get down to five, is it pretty much done with, right? It's a zoo now. Sweet Springs is a zoo for this plant. And there's this one individual laugh and there's no real chance of it ever making a whole population because the genetic diversity is just missing now. It's an unknown question with plants. With animals, it's pretty clear that getting down to a certain level of individual is really problematic, but the plant is not really known. So that's a rare plant. That's the one the rarest plants in California. You can go out and see just sitting and just growing there in Sweet Springs.

ELC: That's what? Arenaria?

MR: Arenaria, yeah.

ELC: And the last question ties to the beginning of your talk and I am asking you this because I actually want hope and I know you are a person of hope. Are you worried about the trees considering not just the global warming but the possible depletion of water resources? We're hearing more and more how it will be harder and harder to get clean water. So thinking about global warming, lack of clean water, are you worried about the trees and do you see any solutions to keep them alive?

MR: I am worried. I'm worried for a number of reasons about trees in California and native trees in California when it comes to global climate change. We—there was a time, a period of
time in the ecology world where it's real trendy to model global climate change. Meaning, if we take all the parameters of where the species grows and then we change the temperature by a couple degrees, where is it going to grow or where is it going to migrate to? And models are crazy. There were orders of magnitude often every direction, which means nobody has any idea what's going to happen. But people have started now to really hone in on what is going to happen, and what apparently is going to happen with the most recent models with many native trees in California is they'll shift northward and they'll shift up in elevation, which is not surprising. But if California becomes Baja California, right, otherwise over the next couple hundred years from a geological point of view, that's almost instantaneous, and many species can't survive that and can't move up. What do species do that are, you know, at certain times that occur at high elevation areas. They can move up the mountain. And so, the modeling of, for instance, the coast live oak, which is an oak that occurs around here, it's our most dominant oak in woodlands around here which occurs from Sonoma down into Northern Baja, California is that thing is going to shift northward. And there are whole areas of San Diego and so on where will no longer occur because of temperature increase which really means higher evapotranspiration, there's water in the ground for it to occur. And then when it comes to water, it's even more complicated especially water in urban areas because it has to do with human intention and what we want to spend the water on. And one thing we're going to need is drought-tolerant plants and drought-tolerant trees. And I am one of the only proponents of eucalyptus apparently left in California because the eucalyptus are, many of them are terrible and they should not be planted in certain areas, around the waterway, and certain species around waterways in California should never be planted again. And they should actually be removed in a lot of areas. And I supported the removal of the eucalyptus at Sweet Springs because I thought ultimately it would increase the biodiversity of that little reserve. But that is a tree. There are species of eucalyptus that never become weedy. I have been hard-pressed to find a single new sapling coming up off of any of these, and they apparently just thrive on neglect. You leave that thing along in a tiny little street well like this that, you know, occasionally a dog comes by and urinates on it and that's all it gets, you know, and that thing grows into a big tree, of nothing, right? And so that—and then it produces shade and it cools the streets and it does—the entire time it's accumulating carbon, right? And that's going to become important that we need to find out and figure out the species that are going to be helpful for us. And they're there. They exist. And this is one group. There are other—eucalyptus are one group, and there are other groups as well. And we as people who are interested in trees in urban spaces, have a large pallet that we're not currently using or the trees in urban spaces and we can move towards more drought-tolerant ones. We need to move towards more California native trees in urban spaces as well. I look at how many tree—where the trees in our urban spaces come from and I put that as a pie chart in the book right here at the beginning of the book. And it's fascinating that just show, you can't see that a little bit well, but it shows a little pie chart here, and this big yellow one-third of the pie chart is Australia. A third of all the trees we have in California in urban spaces come from Australia. But there's a little sliver right there which is six percent.

ELC: Six percent. I remember seeing it this morning.
MR: It’s a California native tree in our urban spaces, only six percent. And some of our trees in California are gray trees and gruel trees. They can live in harsh, harsh environments. And so, those are the types of things we need to focus on it and move away from the Liquidambar in San Diego and into—in the other better trees.

ELC: I love Manzanita, for example, talking about incredibly amazing tree. I mean, so hard and not needing anything and just being stunning and gorgeous, yes. I was this morning flipping through the book and looking at the 6 percent thinking I cannot—shaking my head thinking that's so weird. I have no more questions. I hope you guys have a very perfect time.

[Music]

Moderator: At this point in the conversation, the audience was invited to ask questions.

MR: Go ahead. The question is if you want to be adventurous and plant a tree that's not easily found, where do you find it? That's what the internet is for, right? It's finding things that are hard to find and buying things that you can't find easily. There—I am now writing a column for Pacific Horticulture magazine, which is, it's pretty widely read, not incredibly widely read, but the column is trying to get people interested what I call undeservedly rare trees. That means a tree you walk up to—and I've done this numerous times and that thing is not planted all over California but it's doing really well and it looks beautiful. And why isn't it planted all over California, the answer to that question is not often simple or satisfying. The answer may be that when we at the nursery, when we take it and we move it from a one-gallon container and we put it in the five-gallon container, half of them die for some reason. So we just don't sell that. And there are specialty nurseries though out there who really try and they're trying to grow all kinds of different things. And it's usually people who have the love and they're not really trying to make money or they're trying to make money with something else and they tend to like manzanitas a lot. And so they grow a lot of them or something like—and so, those are the places you have to find and you have to seek them out. It's not easy because if you go to Home Depot, right, they're going to have the same exact trees always over and over and over again, because they are the ones that they know where—they may know the ones that they know will grow. It's a bigger and a global problem. If you look at the parking lot of the new target across from Home Depot, so disappointing with what they planted there. It's a purple leaf plum over and over again. And it's just such a standard cookie-cutter crap tree. There are no crap trees but this is the closest you get, right? In a big windswept valley that's out there, they could have chose so many different and better things and they just knew that purple leaf plum would be available, it be cheap, and it would work, and it would stay alive. And that's depressing. We really need to fight for diversity because diversity is beautiful, diversity means stronger, more resilient urban forest, and also means more people will get interested. So find those nurseries. The question is about whether or not increasing diversity in the urban forest would help the pollinators and bees specifically. The answer seems to be yes. I'm working with a professor at the University of California, Berkeley or Cal, a guy named Gordon Frankie [assumed spelling] and Gordon Frankie is very interested in native bees. There are hundreds and hundreds of species of native bees in California. If you go to a garden and you look around, you don't have
to stay there very long to find a native bee pollinate in some plant there. And what Gordon Frankie has found is if you just look at any parks, and Emerson Park in San Luis Obispo was one of his study sites. The Leaning Pine Arboretum was one of his study sites and he's found that a couple of very interesting results. One is if you just look at the species diversity, the number of species over some given area of plants, the number of the species diversity and the bees correlates always. So the more different types of plants, the more different type of pollinators are going to be there. And that's true in urban spaces and urban parks as well as in places like Arboretum. And he's also found another result which is also fascinating and maybe not surprising is that the more California native plants you have in a given park or garden, the more pollinator and bee diversity you have there, possibly because they coeval with those species and so they find them and they know how to get them and they know how to pollinate them and so on. There's another argument for diversity, right, is that all that diversity, really, there's a whole web of animals in this case dependent on that, and we really could do better to increase it. Yeah, I'm a big proponent of botanical illustrations. I think botanical illustrations are important and it's a dying art because of photography maybe but when species were published, new species were published for centuries of botanical illustration always accompanied that, some beautiful botanical illustration that you can do things in botanical illustrations which you can't do in photography is blow the thing open, right, and look what it looks like on the inside and do it all there. And the answer is I still, in many of my publications, like this botanical illustration, especially scientific ones, I did here because I was trying to connect with people in a way that would—I thought botanical illustration would do that. And people are so turned off to botany in general. I mean all of you, you have some horrible experiences association with botany in your past possibly when you had to take some class in college and they gave you a key and they said, you know, identify these things and here is the 200 scientific names again, you're going to have to memorize and there was some botanical illustrations involved in that. I wanted them to have vibrant photos that were colorful and so on. And so, that was—and also, I can do the photos I can't do—I'm terrible at botanical illustrations, the whole art that I never trained in. And so, it was the combination of those two things. It's not wanting to connect with people with environment photographs and also not being able to do it. I definitely consider something divergent. My degree, my undergraduate degree is in Microbiology from U.C. Santa Barbara. I was very interested in human disease and microbes and why people get sick in certain foods and that kind of thing. And then I went to U.C. San Diego as a biologist. You get into a PhD program as a biologist and you rotate through different labs and see what they do in those labs. And I met a guy named Bob Smith who would just has—he has an infectious love of plants, and it was really hard to disassociate from that. And he convinced me that the plants is—as the way I studied grass flower development with him, that's when I got my PhD in. And it wasn't—and I was always interested in trees. And the background of that, I was interested in big, big trees. I grow up in Northern California, Mendocino County, the largest valley oaks, the largest oaks in California in and around the small valley where I grew up. The redwoods were right there. It's hard to grow up in Northern California and not focus on or love trees, I think, or, and then when I came to Cal Poly, as you may know, as a professor at Cal Poly, you really have to be jack of all trades, and so you can specialize so much because you're going to be required to teach other things. And so, I have the opportunity to begin to study something that I've always had as a hobby, and that was eucalyptus trees. Eucalyptus trees, I thought, well I love—
they are so bizarre and there's so many. There's 800 different species. There some kind of crazy variation on theme, then the most controversial most lively planted non-native trees in California. U.C. San Diego where I got my PhD has cut out of a eucalyptus grove and so I begin to study eucalyptus trees, specifically, but trees in urban spaces in general. And why do some trees become weeds and others don't? That was a very interesting question. We had a question but there's no simple answer. So we plant hundreds and hundreds of different types of trees in California but 5 or 10 of those just start to spread out and do terrible things in riparian places and so on. Why those and not, you know, not the one that's planted right next to it? And so, those are some of the research questions I really tried to focus on at one point and that was here that I was able to do that. [Inaudible Remark] I was. I discovered it. [Laughter] Yeah. I'm kind of proud of that. Could you tell? Yeah. The significant eucalyptus in Poly Canyon, we have two national champion trees on Cal Poly's campus. One is right up by the agriculture in English building there which is right across from where the construction is currently taking place for the new center for science and math. And Mark Chris who is sitting right there was student of mine five, six years ago maybe. And Mark measured it, measured all—the way you get a tree on the big tree registry is you have to measure every part of it. You have measured the height, the exact height from the top uppermost leaf to the bottom. You have to measure the distance at canopy, the amount of the trunk and so on. And it turns out that that red gum that's up there right across from that construction is bigger than any other one in United States. It was bigger than the next biggest one which is in Arizona. And some Australian forester visited here about four or five years ago. And they've never seen one big in Australia which is not all that surprising because it is, it's released from all its past and it's released here from problems that it has in its native range. And the Cal Poly Dairy for many, many years sat up where faculty offices east is in that area and drain right down underneath that tree in that area. And so I got a lot of fertilizer and it's doing well. And it was planted in 1911. So, it's a little over a hundred years old now. And so that's one national champion that we have here. The other one is eucalyptus diversicolor which is at Poly Canyon. If you walk up Poly Canyon, you go up quarter mile at Poly Canyon maybe. There's a road that goes off to the right where the old quarry site is up there. And right to the left of that is a grove of eucalyptus down in the riparian area. One of those is—all of them are blue gums except one, and that one is taller than all the blue gums. It is 186 feet tall I believe, it was when we measured it, is the biggest of its kind, eucalyptus diversicolor, the quarry outside of Australia. There are bigger ones in Southwest Australia in their native range. But this is it. This is the biggest one outside of Australia including Europe or any other places where they grow eucalyptus. And that we climb to the top of to measure it. It's down in the ravine and there is no place where you can easily visualize the bottom of the tree and the top of the tree at the same time. And apparently, the Big Tree Registry doesn't believe in geometry, right, because people make errors. And so, we climbed to the top. We, Chris Wassenberg who is now the director of the, or the manager of Leaning Pine Arboretum and a few other grad students shot ropes up into it and got harnesses on and went all the way to the uppermost leaf. You know, at 186 feet, you're hanging on to a limb like this big and it's moving all over the place. And you hold the stick up to the uppermost leaf and then we drop a line from there and then measure that. And it was much taller than any other of its kind. And so, that's the national champion. And, you know, on all the work I've done, all the publications, all this sort of thing, it's the story of climbing a big tall tree that people were really fascinated by and I guess so much
publicity for that rather than, you know, the 10 papers I've published that nobody cares. You climb the big tree, great. Yeah. No. No, the one in Glendora. There's one—the one in Glendora is the biggest. And I've done informal measurements of all of them. By informal, I mean sitting out there with a tape and they're really hard to measure because they have these big buttresses that go off in every direction and the measure, and pacing underneath the canopy and measuring the canopy and so on. That one in Santa Barbara is the second biggest, the one in Glendora is the biggest, the one in Balboa Park is the third biggest. But they're all ridiculously big, right? It shocking and bizarre when you see them. You can climb up into them and the branches that were crossing 80 years ago or now, completely fused to one other. And they have these roots that come down. If you think about an aerial root, that thing is the size of a pencil when it's first coming down. So it sort of weaves its way around things. But then 30 years later, it's now become the size of a trunk so it looks like these weaving trunks that go around and it's a, the Moreton Bay fig, ficus macrophylla, let's say we have one on campus. It's a young one on campus but you can start to see the things that it's doing. If you, you know, where our new big Pepsi can is that's over there? You know what I'm talking about? The cooling—it's a cooling tower, I believe, right? It's how it is. It's exchange on cooling tower. Right across that little road from that is our only larger Moreton Bay fig on our campus and it's starting to get these buttressing roots to go off in long distances. It's worth walking by and seeing.

ELC: How old is that one?

MR: That is probably, you know, somebody on this campus knows this because they probably planted it. But I guess it's no older than 50 years, something like that. So based on what I've been able to find, the one in Glendora which is really worth visiting, shockingly big, is the biggest in California. [Inaudible Remark] Yeah, it's a teeny little park in some residential neighborhood. The Glendora Owens house, it was planted in the gardens of that about 130 years ago. And so, the house is now is completely gone but there's little park there now, and then its residential track homes right next to it up to that. And if you email me I'll show you, I'll give you the exact position. I'm part of a group that has now mapped every single one of them in California and we have the G.P.S. location of all them. Yeah, that is great question. A lot of people have asked me that. The front cover of the book, what tree is that is. It was my idea to use it and I battled with the publisher about using this tree. I wanted to use it because you—it's clearly a tree and you don't—and it's a big tree with a little house next to it, right? I wanted to give people that perspective with some skyline at the background. And actually, Enrica was pretty instrumental in helping with the design of the cover. But I wanted it to be a tree that people wouldn't instantly recognize. And does anybody in the audience know what tree that is? I didn't think so. All right. Yeah. And that was the goal. And it's actually eucalyptus. It's a type of eucalyptus that makes rough bark and it has a form of eucalyptus but doesn't have the bark like it and not so much the canopy like it. And I want you to make an association with tree but not an association with species that you either loved or hated or so on. And so that's why I wanted to choose this. And it's in San Luis Obispo. This tree is on the corner, I think, a beach in Pismo in San Luis Obispo. And there's this little house that is actually it dwarfs that little house. And when Ron Cones, the urban forester for the city of San Luis Obispo, saw the book and he saw
that tree, he sent me the tree removal application that he—for this tree that he denied four or five years ago for it.

ELC: Good for him.

MR: Yeah. And he said yes to that. You know, it would be vastly different cover, obviously.

ELC: Wow.

MR: Yeah. [Inaudible Remark] I am definitely pro-tree house. I love tree houses. And the best tree for a tree house here, I think is coast live oak. They're strong. They have big huge secondary limbs that come off them. They often have very interesting forms in which limbs come off almost horizontally which are great for tree house formation. There are or were tree houses, big tree houses that people have lived in on this campus. You may or may not know that but they're up in and around Poly Canyon in some of the wild areas around here. And if you know what you're looking for, you can find them. And they're in coast live oaks that are there. Some of them since been removed since last I discovered some of them. But there was a big tree house that was there, people lived in it for quite a bit of time. Completely illegally obviously, but yeah, yeah. All right. Well, thank you all for coming and listening. And thank you Enrica for having the conversation.

ELC: Yeah, priceless.

[Applause]

[Music]

Moderator: This podcast is a 2012 production of the Robert E. Kennedy Library with music by Doug Irion. Visit our blog, Kennedy Library Out Loud at lib.calpoly.edu/blog/outloud. There you can find other library stories and media from Cal Poly San Luis Obispo.

[Music]