

TRANSCRIPT

INTERVIEWEE: Bill Bunch

INTERVIEWER: David Todd

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David Todd [00:00:02] Okay. Good afternoon. I'm David Todd.

Bill Bunch [00:00:06] Hi.

David Todd [00:00:07] And we are with Bill Bunch, and I wanted to thank him, first of all, for giving us some of his time today to share some of his thoughts and memories.

David Todd [00:00:17] With his permission, we plan on recording this interview for research and educational work on behalf of a non-profit group, the Conservation and History Association of Texas, and for a book and a website for Texas A&M University Press, and finally, for an archive at the Briscoe Center for American History, which is at the University of Texas at Austin.

David Todd [00:00:37] I want to emphasize that he would have all rights to use the recording, as he sees fit.

David Todd [00:00:43] I want to make sure that's okay with Mr. Bunch. What do you think?

Bill Bunch [00:00:46] Yes, indeed.

David Todd [00:00:47] Okay. Well, great. Thank you again. Let's get started.

David Todd [00:00:51] Again, my name is David Todd. I'm representing the Conservation History Association in Texas, and I am based in Austin. We are conducting a remote interview with Bill Bunch, who is also based in Austin. It is Friday, November 10th, 2023. It's about 2:25 in the afternoon, Central Time.

David Todd [00:01:12] By way of introduction, Bill Bunch is an environmental attorney as well as the founder and long-time executive director of the Save Our Springs Alliance. In addition, he has worked as counsel for Sierra Club, Hill Country Foundation, Travis Audubon Society, Texas Rivers Protection Association, Texas Center for Policy Studies, San Marcos Foundation and other conservation non-profits. He's also been a leader at other non-profits, including the Greater Edwards Aquifer Alliance.

David Todd [00:01:42] As part of his effort to protect the Hill Country and Texas springs, in particular Barton Springs, he has been heavily involved in ensuring the future of the Barton Springs salamander, which is going to be kind of the core of what we might be talking about today.

David Todd [00:01:56] So with that, again, thank you, Bill.

David Todd [00:02:00] And I would like to just start by asking you about your childhood and if there might have been some events or people who launched you on your interest in animals and law and conservation.

Bill Bunch [00:02:15] Well, I grew up in Arlington. I was born in San Antonio, grew up in Arlington. My older sister was a competitive swimmer, so I followed her into competitive swimming and did that through my, so starting when I was about eight years old through my first year in college. So, I was a water guy from way back. I loved swimming in pools with lane lines on the bottom, but also wild waters as well - creeks and rivers and gulfs and oceans.

Bill Bunch [00:02:54] And then I also had the good fortune to grow up next to a family that had some boys a little bit older than me. And their dad was a scoutmaster. And so, I went into scouting, following them. And just that got me out of suburbia of Arlington, Texas, and into the woods and paddling rivers and canoe trips and whatnot, and just really did connect with nature at a, you know, in my youth.

Bill Bunch [00:03:30] And this was the seventies when, you know, there was the big first phase, or maybe there was an earlier phase, but the first time when there was this widespread push to adopt a range of federal laws to protect our environment. You know, Earth Day was 1970. So, you know, I was ten years old at that point. And then you had Clean Water Act, Clean Air Act, Endangered Species Act, National Environmental Policy Act, all being adopted roughly around that time when there was a broad consensus - Democrats, Republicans - everybody were conservationists and understood that we had to get a handle on the pollution and overdevelopment of some of our landscapes.

David Todd [00:04:28] Good. That's great.

David Todd [00:04:31] Let's talk about your schooling. Were there any teachers or coaches or classmates that might have also influenced you?

Bill Bunch [00:04:42] Well, certainly some of my friends in swimming. We would go to meets, but then we would try to sneak off and jump in a river or find a spring-fed swimming pool or someplace fun to swim that wasn't just an Olympic-size 50-meter pool, a racing pool. Let's see ... a number of the kids I was in scouting with were very inspirational along those lines.

Bill Bunch [00:05:14] One of my swim coaches was into backpacking, and so when I was in junior high, I was invited to go with a few coaches and older swimmers on a trip to Grand Tetons National Park and Yellowstone and did some backpacking up there that was truly spectacular. I'd never really been outside of Texas to the big wilderness in other places. So that stuck with me as well.

Bill Bunch [00:05:52] And then, so this is, you're talking right now about grade school, junior high, high school. What about college? And then, of course, you went to law school at Berkeley in California. Anybody there? Teachers, classmates, again, who might have said, "Bill, this is good stuff. You should you should spend more time and interest in it."

Bill Bunch [00:06:17] Yeah, Well, so, I went to the University of Colorado in Boulder following a friend of mine who was a hard-core rock climber who was going there, and he suggested, "Well, maybe you should go too." And I checked it out. I was like, "Wow, yes, I want to do this."

Bill Bunch [00:06:35] I started out as an engineering major because I was pretty good at math and wasn't sure what I wanted to do. And my father was an engineer. But, I went to the first day of classes in the engineering building, which was separate from the rest of the campus, and there were like all guys and virtually no girls.

Bill Bunch [00:07:00] I said, "No, I'm not doing this."

Bill Bunch [00:07:03] So my first effort at, you know, fighting big government bureaucracy was, you know, my first three weeks of freshman at University of Colorado at Boulder, fighting the bureaucracy to completely drop my entire class schedule and add, you know, a whole new schedule as an environmental biology major.

Bill Bunch [00:07:30] And so, in that environmental biology program, I definitely had some very inspiring teachers. Alwen Williams was in her seventies. She was an ornithologist. You know, she had won her Ph.D., you know, before Watson and Crick discovered the double helix, and showed up for the first day of class, this sort of tiny, ancient woman with these sparkly eyes. And she had a museum specimen hawk, mounted, you know, clutching a limb with its wings out. And she's petting this stuffed hawk while she's telling the class, you know, why birds are, you know, the best animals to study.

Bill Bunch [00:08:31] And it just, it hit me hard. So, that definitely spurred my love for birds.

Bill Bunch [00:08:39] But a bunch of that class was going out birdwatching. You know, we'd get up early and meet and pile into vans and go out in the hinterlands around Boulder to birdwatch. So, that was a real inspiration.

Bill Bunch [00:08:56] And I think even in high school, I had already started thinking maybe I wanted to pursue something in the conservation field, and that was why I chose environmental biology as a major. And so, I was open to connecting with the wilds of the Rocky Mountains, you know, which is incredibly different than the North Texas Cross Timbers district that I grew up in.

David Todd [00:09:29] Well, so was that part of the experience at UC, the fact that that there were classrooms, for sure, but there was also this whole landscape of national parks and national forests that you could explore?

Bill Bunch [00:09:42] Yeah, absolutely - camping, hiking, rock climbing, skiing in the winter. I'd never skied before, but I started doing, you know, I learned my freshman year and enjoyed it while I was there. I don't do much anymore, since I'm back in Texas.

David Todd [00:10:02] But, yeah, it was just it was wonderful and a whole lot of my, you know, fellow environmental biology students were all into it. At Colorado, they had the two biology departments - Molecular, Cellular and Developmental - and there were all the hard-core pre-med students. And then all the hippies who wanted to hike in the mountains were in the Environmental, Populational, and Organismic Biology department. And just really made fast friends with a fair number of those folks.

David Todd [00:10:40] It's interesting how people get sorted up by their disciplines and their hope-for careers. Sounds like that was your experience.

Bill Bunch [00:10:49] Yeah. So then, you know, I was thinking I might go to law school and, you know, be a public-interest environmental advocate. That was, I never like made a solid decision to do it, but it was kind of in the back of my mind. So, I kept going that direction. And then when I finished, you know, my undergrad degree in Boulder, I applied to some law schools, and was accepted to go to law school in Berkeley, California, at University of California.

Bill Bunch [00:11:21] They had a strong environmental law program there. All the big environmental groups had offices in the Bay Area where I knew there might be some opportunities for internships and might make those connections. So, I went there for college. Ah, excuse me, for law school.

David Todd [00:11:47] And again, you know, were there people that, you know, you really glommed onto who were, you know, faculty members on campus or maybe administrators in some of these offices of conservation-minded NGOs in the Bay Area?

Bill Bunch [00:12:05] So yeah, I made some really great connections there. John Dwyer was my environmental law professor, and he was super open to engaging with the students who were interested in and along those lines and you know, we'd go out and drink a beer or see a movie or something, and that was super encouraging.

Bill Bunch [00:12:31] And then I was extra blessed when Joseph Sax, who's sort of the godfather of environmental law, who was a law professor at the University of Michigan for many years after being sort of pioneering environmental law on behalf of the Sierra Club for a number of years. He came and was a visiting professor at Berkeley for a year, and then at Stanford. He was going to move to the Bay Area and he was trying each of those out.

Bill Bunch [00:13:03] So I had Joe Sachs for Public Lands Law and we did some amazing field trips to some of the national monument lands around the Bay Area.

Bill Bunch [00:13:19] And then I did an internship with the Environmental Defense Fund. Their office there in Berkeley had Tom Graff and some others who were really pushing hard at this pioneering effort to make compelling economic arguments in favor of environmental protection with cost/benefit analysis approaches and trying to, you know, address this concept of externalities, and how that was resulting in the markets not working properly because people making stuff were able to externalize their costs through polluting the environment and not paying for those costs that the rest of us would absorb.

Bill Bunch [00:14:10] So, I was super blessed to work with those folks on a full semester internship.

Bill Bunch [00:14:19] And I almost stayed in the Bay Area when I finished. But I felt like the there were lots of people doing really good environmental protection work in California, whereas there was almost nobody doing it back in Texas. There was a handful of folks doing public interest environmental advocacy in Texas. So I knew that if I came back here that I could immediately be doing stuff that nobody else was doing and also doing things that really needed to be done, because, you know, the population was booming and, you know, pollution and other issues were very real here back in Texas.

Bill Bunch [00:15:05] And I knew I could come to Austin to do it. And Austin, I knew from my days as a competitive swimmer growing up, coming to swimming meets here, that Austin was

a nice place to be. And part of that was Barton Springs, and great Tex-Mex, and of course, the live music scene here.

Bill Bunch [00:15:25] So, rather than staying in the Bay Area, I came back to Austin.

David Todd [00:15:31] Fortunate thing for a lot of the rest of us.

David Todd [00:15:36] Well, another thing that some folks attribute their interests and enthusiasm for environmental stuff is a, you know, sort of general media - books, TV shows, movies. Were any of those important to you?

Bill Bunch [00:15:58] Well, I did ... Yeah. I would say my freshman year in Boulder, I read Edward Abbey's, "The Monkey Wrench Gang" - classic - which inspired, you know, the whole establishment of the Earth First movement, and then his other book that's rather well-known, "Desert Solitaire", where he documents sort of a memoir of his time as a firewatch park ranger at Arches National Park in Utah.

Bill Bunch [00:16:37] I'm sure there were others, but those are the ones that that really come to mind as inspirations. Yeah.

David Todd [00:16:46] And anything in the moving pictures world - videos, TV shows?

Bill Bunch [00:16:55] Hmm. Let me think about that. Not that's really jumping out at me. I guess Robert Redford's "Jeremiah Johnson" film. That was inspiring to me.

Bill Bunch [00:17:08] Let me think. I'm sure there was others. I don't know. I'm not coming up with any others right now.

David Todd [00:17:21] Let me throw one out that someone mentioned to me. Did you see Koyaanisquatsi?

Bill Bunch [00:17:27] I did. Yes. I'm glad you mentioned that. Absolutely. That was incredibly inspiring, as well. Magical movie. I'd love to see it again. It's been too long.

David Todd [00:17:46] Yeah, well, this is all good.

Bill Bunch [00:17:49] And well, and then later there was "The Milagro Greenfield War". That was super fun. And "A River Runs Through It". That was also later. Yeah, I guess those are the ones that stuck with me.

David Todd [00:18:09] Okay, well, these are great little touch points. And so, if there are others that come to mind later, then mention them. But that's a great introduction.

Bill Bunch [00:18:19] Okay.

David Todd [00:18:20] So, let's talk a little bit about the Barton Springs salamander. Do you recall the first time you might have seen one of these guys?

Bill Bunch [00:18:35] I'm pretty sure the first time I saw one was actually in, at the zoo in Fort Worth, I believe. It is the Fort Worth Forest Park Zoo. In their aquarium. Um, not very, not

particularly sexy, but they're rather elusive. You don't see them in the wild. You've got to dive down. And they're small. And they hide under rocks so they don't get eaten by fish.

Bill Bunch [00:19:16] But then I did, you know, go to the Springs a time or two when the City biologists were doing salamander surveys, you know, with their SCUBA gear, and they would, you know, catch them and, you know, measure them. And so I saw them. That was the first time I saw them in the wild, was with the help of City biologists.

David Todd [00:19:41] Okay. So, my understanding is that people knew that there were these salamanders in Barton Springs, but they weren't actually described until the early nineties. Do you recall that early process of, you know, trying to give them some taxonomic description?

Bill Bunch [00:20:04] Yeah. So, you know, I'd gotten involved on local conservation work with folks in Travis Audubon Society, the local chapter of the Sierra Club, the local Earth First activists initially in trying to protect the black-capped vireo, which was the first species locally to Austin that was listed endangered.

Bill Bunch [00:20:31] And then we came to learn that there were five or six cave-dwelling invertebrates that had been petitioned to be listed some years back by some cave biology enthusiasts. And that that was just sort of sitting on the shelf at U.S. Fish and Wildlife Service. So we advocated for that.

Bill Bunch [00:20:56] And then similarly, we came to learn that the golden-cheeked warbler was a candidate and certainly should be listed because of its very limited and specific nesting range right here in central Texas.

Bill Bunch [00:21:14] So those were the species that we worked on first, but I think it was roughly about that same time - the early nineties - when the whole Save Our Springs movement, you know, came to being in Austin, that we learned that, yes, some U.T. faculty biologists had caught some salamanders and done some work on the species so that it was clear that it was in fact a distinct species. But there had never been any work to actually, you know, write a describing article and name the species, you know, in the scientific literature.

Bill Bunch [00:22:02] So, one of the folks that jumped in on the whole Save Our Springs effort was Mark Kirkpatrick, who was a biology professor at U.T. And he was not particularly studying, you know, he wasn't a herpetologist, you know, studying amphibians or salamanders. But he tracked down the folks at U.T. who were.

Bill Bunch [00:22:29] And sure enough, some of them picked up that earlier scientific work and moved towards, you know, publishing and describing the species, naming it, so that it could be officially protected.

David Todd [00:22:48] And so, the folks that he was working with, I guess, would have been David Hillis and Andrew Price, Paul Chippindale?

Bill Bunch [00:22:54] Yes. Yeah. David Hillis. Yes. David Hillis and the folks in his lab at U.T. And then they did end up, you know, naming the *Eurycea sosorum*, so as a tribute to the Save Our Springs community that was working at that point. Several years of hard work to protect the the home of the salamanders, Barton Springs.

David Todd [00:23:25] That's a very nice tribute.

David Todd [00:23:28] Well, tell us a little bit about the Barton Springs salamander. I think you mentioned a little bit about its niche in the springs, hiding under rocks, hoping not to get eaten. Can you tell us like a, you know, basic sort of lay description of the life history of these creatures and the niche that it fills?

Bill Bunch [00:23:49] Yeah, they're super interesting. There are others that have a very similar morphology and life history. They're quite small, just, you know, 2 to 3 inches as adults.

Bill Bunch [00:24:07] They have reduced eyes. They still have some ability to see or detect light. But because they're mostly in the aquifer or right around the spring openings, you know, light perception is not so important to them.

Bill Bunch [00:24:26] They have these fabulously beautiful, bright red external gills coming out of their sides of their necks, and a sort of flattened snout. And they have different color variations, but mostly they kind of have a fleckling - I'm not sure the right word - purplish, kind of spotted, a little bit see-through in the skin, and then the reduced eyes, and very thin little legs that they use more as like kind of, you know, to poke themselves along the bottom.

Bill Bunch [00:25:09] So they live on the bottom. They're bottom-dwellers. They eat little, small aquatic insects and other aquatic arthropods and aquatic invertebrates.

Bill Bunch [00:25:22] They hide from the fish.

Bill Bunch [00:25:25] They have a very slow metabolism. So, they live a long time. I think there's been some in the aquaria here in Austin now that are at least 20 years old, maybe longer at this point.

Bill Bunch [00:25:43] So, yeah. They're sweet. We like them.

Bill Bunch [00:25:52] They are also, you know, because they have these external gills and this very thin skin and they're adapted to this constant-temperature, cold spring water that is extremely clean and clear, high in dissolved oxygen, low in turbidity, and low in nutrients.

Bill Bunch [00:26:20] And so, all of these features, you know, make them very sensitive to changes in water quality. And because they're on the bottom, you know, there's particular concern about their exposure to hydrophobic pollutants - so polluting chemicals that are attached, you know, to particles that would settle on the bottom. So, not the pollutants that might dissolve in the water column, but those that attach to the sediment set on the bottom.

Bill Bunch [00:26:59] And then, the salamanders are either exposed to those pollutants directly or those pollutants may harm or even kill their prey species. So, a number of these prey species of small aquatic inverts are extremely, even more sensitive to pollution than the salamanders themselves.

Bill Bunch [00:27:28] So they, you know, they are an indicator that the springs are healthy as long as they're there. And we like to say, you know, "may salamanders forever swim in your water supply". That's our blessing that we give to all that we know.

David Todd [00:27:49] That's a very nice blessing.

David Todd [00:27:52] Well, and then tell me a little bit about the habitat and range of these Barton Spring salamanders. Where do you find them?

David Todd [00:28:01] Well, so, the Barton Springs salamander is found mostly right at the openings of the springs. We know they're farther down in the aquifer, but this slab, these chunks of limestone, where the springs flow out of, you know, the water's flowing rapidly through these open channels. And so, the salamanders are in those open, water-filled channels.

Bill Bunch [00:28:31] They, we know they're farther down in there, but we don't have a good idea of how extensive. It's, you know, they try to estimate their population, but they can't really. You know, that's some fair amount of guesswork.

Bill Bunch [00:28:48] They do not metamorphose like other, you know, amphibians, other salamanders. So, they live their entire life cycle, you know, in the water. But they need they need the clear, moving water to keep the cobble rock where they live, you know, clear and not embedded with, you know, sediment, mud.

Bill Bunch [00:29:19] So sediment loading, and we get a ton of, you know, sedimentation of the aquifer, especially when there's big construction projects and a lot of the earth is exposed. We have these intensive downfalls of rain. You know, we're in the flashflood alley. So, there are incredibly powerful storms that can, you know, erode an exposed hillside very quickly and wash that water, sediment loadings into the aquifer.

Bill Bunch [00:29:49] And then that settles out and can completely basically fill in the cavities where the salamanders would be living and bury them. Or at least, you know, they can get entrapped there. But if they get out, then, you know, their living areas is now, you know, destroyed by that.

Bill Bunch [00:30:12] Initially, we thought they were only right at Barton Springs. But over the years they have been found at other springs in the Barton Springs watershed further south on the recharge zone down, you know, west of Buda and Kyle, in northern Hays County.

Bill Bunch [00:30:35] And then they've actually been found and Trinity Aquifer springs, up in Onion Creek and South Onion Creek in Dripping Springs. And that's, that was kind of surprising because, you know, these aquifers are interlaced, but they, you know, the geologists do identify them as distinct, you know, rock and aquifer zones.

Bill Bunch [00:31:10] So, they have a broader range than we thought. But it's still a fairly small area of the planet's surface, you know, right here in central Texas. That entire area where they have been found is growing rapidly. So, you know, they were listed endangered because, you know, they're in harm's way with the urban growth that's been rapid, you know, since the eighties and seems to almost never let up, you know, over these last 30 years or so.

David Todd [00:31:51] Gotcha. Well, that was actually something I thought you might tell us a little bit more about. What sort of trends are you seeing in these salamanders? I mean, I guess you're describing the range seems to be expanding, but have there been concerns about their vulnerabilities, you know, anything you can tell us about impacts on them?

Bill Bunch [00:32:13] Yes. So, in the U.S. Fish and Wildlife Service rule, you know, listing the species as endangered, you know, they identify several of the threats to the survival of the species. So, and most of those threats, you know, trace back to the urbanization of the watershed, and the threats that that urbanization poses to both polluting the water and the sediments in the water, the bottom structures, and pumping excessive pumping of the waters.

Bill Bunch [00:32:54] And so, more specifically, some of the pollutants that they identify as threatening the survival of the species are polycyclic aromatic hydrocarbons, which are basically byproducts of, you know, combustion engines, you know, automobile travel across the watershed, some toxics from, you know, brake linings wearing off from automobiles.

Bill Bunch [00:33:23] And these are some of the toxics that also get in our air and are a threat to safety, you know, we inhale them as tiny particles. So, copper from brake linings, various plastics and petroleum chemicals from tire wear and tear, and then, you know, the droppings from gasoline, antifreeze, you know, oil, engine, oil, etc.

Bill Bunch [00:33:55] So, those were all identified as threatening the survival of the species, both directly and then, you know, as a threat to the survival of the prey species.

Bill Bunch [00:34:09] Also, when we get into drought times, like we have been now, the chemistry of the water changes in the aquifer. The dissolved oxygen drops. And the salt content goes up because just the dynamics of the subterranean flows of the waters change, and we get water coming in from the east, east of what they call sort of the "bad water zone", which if you go further east on the Edwards, it's saltier water.

Bill Bunch [00:34:47] And so, what happens during those drought conditions is with those chemistry changes of saltier water with lower dissolved oxygen, the species pretty much stop reproducing. So, they don't die, but they're stressed, and they can't reproduce during those periods. And we know that because they're, you know, they're finding them and, you know, they don't see, you know, the juveniles, you know, if you have a drought that lasts more than a short period of time.

Bill Bunch [00:35:23] So thankfully, we have the Barton Springs Edwards Aquifer Conservation District that has some legislation that authorizes it to limit pumping from the Barton Springs pool of the Edwards Aquifer. So, that helps greatly reduce the threat of de-watering the aquifer and drying up the springs under drought conditions.

Bill Bunch [00:35:49] But the District's powers are not absolute, and their protocol for reducing pumping of their permitted pumpers during drought conditions will help, but if we have really severe drought, it won't help enough.

Bill Bunch [00:36:10] So, theoretically the springs could still be pumped dry or extremely low to the point where, you know, the survival of the species could be threatened.

Bill Bunch [00:36:23] What we do see, though, when we're outside of a drought, they're still finding quite a few salamanders. So, the populations seem to be staying pretty healthy.

Bill Bunch [00:36:37] Occasionally, they'll find some that have some deformities that are probably triggered by pollution.

Bill Bunch [00:36:48] But as best as we can tell, they're hanging on at this point.

David Todd [00:36:57] Okay. Well, considering their limited range and this whole list of possible impacts, I gather there was an effort in '97 to list the species as endangered. And it'd be great to hear your views about how that petition was, you know, prepared and submitted and then some of the pushback. That was held against it.

Bill Bunch [00:37:32] Yeah. So, yeah, we had been working in those early years of the Save Our Springs movement where there was a big push that was successful, where a group of environmental leaders from different groups came together to draft our own ordinance that would strictly limit development in the Barton Springs watershed, at least that part of the watershed that's under the City of Austin's jurisdiction to regulate.

Bill Bunch [00:38:05] We drafted our own petition to limit that development, and it was called the Save Our Springs Ordinance. Under the City Charter, we petitioned it, or pursuant to City Charter's provision for initiative and referendum, we petitioned that ordinance onto the ballot and it was approved by Austin voters in, by a landslide, basically 2 to 1 in August of 1992.

Bill Bunch [00:38:34] We knew that the rest of the watershed, the other two thirds were outside the city of Austin's jurisdiction, and so that that wasn't going to be enough to really protect the springs. We also knew that the developers were going to be attacking the ordinance both in the legislature and the courts, and that there needed to be more.

Bill Bunch [00:39:00] And so, when we learned that, yes, these scientists at U.T. had in fact identified the salamander as unique to Barton Springs, we knew then, you know, that it would warrant listing as endangered because of its narrow range and its vulnerability to the urbanization of Austin.

Bill Bunch [00:39:23] And so, at that time, Mark Kirkpatrick, the biology professor at U.T., was serving on S.O.S. board of directors as a volunteer, and he joined with his wife, Barbara Mahler, who at that time was working on her Ph.D. at U.T. in hydrogeology. And they joined together to draft an official petition to list the Barton Springs salamander as endangered.

Bill Bunch [00:39:59] Under the Endangered Species Act, it specifically calls for people to petition a species on to the list if they believe that the facts are such that the species is threatened with near-term extinction, and to lay out, you know, the science and facts that would support that.

Bill Bunch [00:40:22] And so, they drafted that petition, and I worked with them and helped them sort of put it in the legal framework. And they filed that petition. I want to say that was '94-ish or thereabouts. I could look that up.

Bill Bunch [00:40:39] But in any event, it got filed and then there's a series of timelines that happened where they were supposed to do an initial review within 90 days and then a second round of review in the following 12 months. And then, after that initial sort of 15 months of review, they're supposed to either move towards listing and officially publishing a listing rule in the Federal Register, or making a finding that the species is not warranted for listing, that the science and facts or the evidence available doesn't support that.

Bill Bunch [00:41:20] So, of course, they drug their feet and we had to sue them.

Bill Bunch [00:41:26] And the Act also calls for citizen enforcement of the Act. And so, S.O.S. and Dr. Kirkpatrick came together. We sued to force the agency to make a determination.

Bill Bunch [00:41:45] They finally did, in response to that litigation. And they made a decision to well, let's see... They missed the first deadline and we sued. And so, then they did propose it for listing as endangered based on their own biologists' review of the information and support for it.

Bill Bunch [00:42:19] And then that's when the politics got involved. And they were sitting on that. So, we had to sue a second time to get a final listing decision. They were refusing to make that decision.

Bill Bunch [00:42:39] And then, when they finally did, they decided not to list it, because they had, at the 11th hour, Fish and Wildlife entered into an agreement with the State of Texas under the auspices of then-Governor George Bush, that the state would take various measures that would protect the species. And under this last-minute agreement, the species would be protected without the listing.

Bill Bunch [00:43:14] And so, we were still in the courthouse under Judge Lucius Bunton, the late Lucius Bunton, who was a rather colorful federal judge (which we can talk about that if you'd like). We immediately petitioned to say, "Hey, this last-minute agreement doesn't really protect the species under the Service's own criteria".

Bill Bunch [00:43:43] A whole bunch of it was just voluntary, sort of vague things like, "We'll try to do this and we'll try to do that". And yet what the agency itself had already written in its proposal to list the species identifying all these threats, the agreement that they're now using to justify not listing didn't address those.

Bill Bunch [00:44:09] So Judge Bunton said, "No, sorry, you know, this does not meet the dictates of the statute," which is you have to make that listing decision based on the best available scientific and commercial information.

Bill Bunch [00:44:28] Now, the judge can't tell them what the right answer was. He can just tell them that the answer they gave was wrong.

Bill Bunch [00:44:37] So, Judge Bunton kicked it back to the agency to try again with a different answer.

Bill Bunch [00:44:47] At that point, we had learned that development interests in Austin had a direct path of lobbying into the White House and the President's Council on Environmental Quality, which is kind of an overseer of the other federal environmental agencies. And these were powerful Texas Democrats who had direct and longstanding ties with President Clinton, Vice President Gore, then Secretary of Interior Bruce Babbitt.

David Todd [00:45:28] And that that's where the real resistance was coming, that these powerful Democrats, in partnership with Governor Bush and Republican-leaning or associated development interests were trying to block it.

Bill Bunch [00:45:45] So, that's when we all got involved in the politics side.

Bill Bunch [00:45:52] Jerry Jeff Walker, famous Austin musician, singer/songwriter. He and his wife Susan, who was his business manager, and they had pioneered the idea of independent production of their own music. They had done tons of benefits for Democratic candidates around the country, had tremendous, you know, support for the Democratic Party for years, never asking a single thing in favor, you know, in return for that support. Unlike a lot of political people who get involved, they're getting involved because they want something back for themselves out of it.

Bill Bunch [00:46:41] And so Susan and Jerry Jeff basically got a hold of Al Gore and said, "What the hell was going on? This is not okay. We've never asked for a single thing in our life. Your own scientists are telling you what the right answer is under the science. And the law requires you have to make the decision based on the science. You need to list the species."

Bill Bunch [00:47:08] "And oh, by the way, Earth Day is coming up. And how about let's do a big press release where Secretary Babbitt could make a news splash and announce the listing of the Barnes Spring salamander as endangered on Earth Day?"

Bill Bunch [00:47:26] And that's what he did.

Bill Bunch [00:47:29] And so, that that ended the lawsuit and the species got listed, and it's still listed today. It was officially published in the Federal Register as an endangered species rulemaking a little bit later on. I believe it was April 30th, 1997.

David Todd [00:47:53] So...

Bill Bunch [00:47:54] That's a long answer to your question.

David Todd [00:47:56] No, this is great.

Bill Bunch [00:47:58] I hope that's okay.

David Todd [00:47:59] This is wonderful to hear, and you know, from somebody like yourself who was intimately involved in it, it's priceless.

David Todd [00:48:07] Now, this is sort of trying to put your feet in other people's shoes, but I understood that one of the arguments that was pushed was one of private property rights and that this listing and the development controls that would be implemented would fly in the face of private property use in the state.

David Todd [00:48:35] Can you talk a little bit about that argument?

Bill Bunch [00:48:39] Yeah, sure. So, I guess the market forces who are worried about environmental protection laws, including endangered species protection, you know, infringing on property rights, they tend to take what I would say is an extreme view of what "private property" means. And that is one that, you know, "It's my land, I own it, I can do whatever I want. And if you're trying to tell me what to do with my land, then you have to pay me for it. You know, you're infringing on my property rights and that's a taking or, in this instance, perhaps a regulatory taking."

Bill Bunch [00:49:27] So, you know, the steps that are needed to protect the salamander are based around the idea that you need to keep most of the watershed that is privately owned in

a undeveloped state, you know, not covered with pavement, you know, parking lots and highways and rooftops, and not develop, you know, with lawns, with, you know, fertilizers and whatnot.

Bill Bunch [00:49:55] And so, you know, that was their concern.

Bill Bunch [00:49:59] But our laws have always recognized the right of the government to regulate the use of private property in the public interest, especially where public resources are threatened. And our water is a public trust resource that we all own and we all depend upon. It's not a private property right. It's a public property right. And that comes first and foremost above private property rights.

Bill Bunch [00:50:33] So, we have every right to regulate the use of private land to protect our water and to protect our wildlife. Wildlife is also recognized as public trust property, if you want to call it property, rather than, you know, fellow beings on this planet that we share the water and the air with.

Bill Bunch [00:51:02] But that's certainly our view, that the law is 100% justified to regulate, and even very strictly regulate, what someone can do with their private property, if there's, where there's a legitimate public purpose. And here, you know, protecting water is at the top of that list of legitimate public interest in restricting private property.

David Todd [00:51:32] Okay. So, some of the conservation efforts that flowed out of the listing, what did they require? I think there's in development controls...

Bill Bunch [00:51:50] Yeah.

David Todd [00:51:50] Land acquisitions, daylighting of some of these spring runs, maybe you could talk about some of those measures.

Bill Bunch [00:51:57] Yeah. So, just back up a little bit, to get some of the context.

Bill Bunch [00:52:01] So, you know, we had some good protections with the Save our Springs ordinance, and our local officials in Austin generally being more pro-environment.

Bill Bunch [00:52:14] But then, at the state level, you know, Texas is a private property state. And we have very weak state environmental protection laws, by and large, and great hostility even, to protecting the environment, especially where it might cause some additional costs or restrictions on economic development.

Bill Bunch [00:52:43] So, the push to get the salamander listed endangered at the federal level was in part to try to trump that hostility from the state government, and bolster protection of these incredibly vulnerable waters where we find the salamanders live with the federal law.

Bill Bunch [00:53:07] Now, that has not given us near as much protection as we were hoping for when we were working to get the salamander listed.

Bill Bunch [00:53:18] And there's a few reasons for that. The largest one being that these threats, it's not like we're, you know, in the oil patch where, you know, a single stream of

really nasty pollutants, you know, can be readily identified if there's an oil leak or a discharge of toxic chemicals out of a factory, you know, a plastics plant or something.

Bill Bunch [00:53:45] The threats to our water quality are of a more general nature from urbanization. And so, trying to make that causal link between this pollution that's dispersed and coming from all of our activities on the surface, or at least from, you know, more than one person or one place you can identify and trace that pollution to harming a specific salamander when they're down in the aquifer is a very challenging thing to do.

Bill Bunch [00:54:31] And the courts have unfortunately adopted over the years this idea that you have to, you need to show that sort of strict causation chain between this activity on the landscape, you know, causing this very specific kind of harm, even though we know it's happening. And the science that's summarized in the listing rule for the salamander, you know, lays that out.

Bill Bunch [00:54:59] It's a different thing when you're trying to implement protections.

Bill Bunch [00:55:04] But, what we have gotten out of it is we've gotten mitigation requirements on big highway construction projects. The salamander listing has meant that the City of Austin has to have a permit and be careful about how they actually manage Barton Springs pool as a recreational swimming pool for, you know, over a million people these days per year.

Bill Bunch [00:55:34] The salamanders help make sure that the Barton Springs Edwards Aquifer Conservation District does in fact limit the pumping and require its permitted pumpers to cut back during drought conditions to help protect the species, you know, under those drought conditions.

Bill Bunch [00:55:57] So we've had some real benefit, but it hasn't helped as much as we'd hoped.

Bill Bunch [00:56:07] The biggest example right now is this horrible construction project. If you drive out 290, you know, through Oak Hill, towards Dripping Springs, there's this mega highway construction project happening right there at the Oak Hill Y, which we fought off for, off and on, for 20 years. But then they finally, you know, pushed it through. And TXDOT, our highway department, was able to convince U.S. Fish and Wildlife Service that they could build that because it didn't really pose a threat to the species.

Bill Bunch [00:56:45] In our view, that was totally unjustified or unsupported in science. But they made that finding and the project went through. We sued, but, you know, we lost.

Bill Bunch [00:57:04] Part of that was an endangered species argument. Part of it was on other environmental issues.

Bill Bunch [00:57:10] But Texas is in the U.S. Fifth Circuit Court for our federal courts. And the Fifth Circuit is well known for being rather hostile to pro-environment plaintiffs. Environmental groups like us that try to sue to enforce our laws don't, very rarely have much luck at the Fifth Circuit.

Bill Bunch [00:57:42] So that's, those are some of the issues. I'm not sure if that was what you were looking for.

David Todd [00:57:48] Very helpful.

Bill Bunch [00:57:49] Are there other components of that that you were interested in?

David Todd [00:57:59] So, to what degree do you think land acquisition in the basin has been linked back to the species listing?

Bill Bunch [00:58:10] Yeah. I'm really, yeah, I'm really glad you asked that. Yeah, we recognized early that these regulatory efforts, you know, getting the Save our Springs ordinance approved and into place, and then getting the salamander listed endangered, both were sort of regulatory measures to help protect the Barton Springs watershed.

Bill Bunch [00:58:39] But, the environmental folks, activists, realized that was not going to be enough, that we really did need to permanently protect and just take out of the development pool as much land in the Barton Springs watershed as we could.

Bill Bunch [00:58:57] So, there have been a series of efforts to do that - buying lands for specifically for endangered species protection, not so much for the Salamander itself, but for golden-cheeked warbler habitat and for endangered cave critter habitat, which directly affects and helps protect Barton Springs salamanders.

Bill Bunch [00:59:26] And then some bond measures that have been approved by voters in the City of Austin, Hays County, Travis County. Travis County voters just approved another \$276 million for buying parkland, and specifically buying land for watershed protection. That was approved by voters this Tuesday of this week, and approved, I think it was a 77% "yes" vote for that measure.

Bill Bunch [01:00:02] Hays County has had a couple of bond measures over the years to protect land, park land, but also land specifically for the purpose of protecting water, twice over the years.

Bill Bunch [01:00:16] And so, we've taken a big chunk of the recharge zone for Barton Springs out of the development pool forever.

Bill Bunch [01:00:26] We need to do more. It's not enough.

Bill Bunch [01:00:29] We've had some private landowners who've donated conservation easements and have really helped. Other private landowners who've sold conservation easements for reduced price to the City of Austin or Travis County or Hays County. So, that's been a huge part of the overall effort to protect the springs and the salamander.

Bill Bunch [01:00:57] At this point, roughly about half of the watershed is either permanently protected or already developed, and then about half of it is still up for grabs. And that's mostly the upper watershed, the upper parts of Barton Creek and Onion Creek watersheds and the Dripping Springs area in particular, the upper north-northwest Hays County.

Bill Bunch [01:01:28] So you know, the future of the salamanders and Barton Springs is still really very much up for grabs, both in terms of pollution issues and development, and then also pumping.

Bill Bunch [01:01:43] The Barton Springs Edwards is pretty well capped and like I said, mostly protected, although if climate change translates into a whole different regime of much less rainfall, it could it could be a very different future for the springs and the salamander.

Bill Bunch [01:02:06] But the upper part of the watershed is the Trinity Aquifer. And the pumping pressure there is tremendous. And the Hays Trinity Groundwater Conservation District, the Southwest Travis County Groundwater Conservation District, those two districts don't have the legal powers, the authority, as strongly as does the Barton Springs Edwards Conservation District. And they're also not near as well-funded.

Bill Bunch [01:02:46] So, there's a bunch of pumping from individual home wells, from agricultural wells, that's unregulated. And that pumping is proliferating. And we see it, with the small springs literally drying up and disappearing during extended dry periods.

David Todd [01:03:12] Okay. What about work at the pool itself? It sounds like there's this balancing that goes on between being able to enjoy the Springs as a place to go swimming and diving...

Bill Bunch [01:03:30] Yes.

David Todd [01:03:30] But then also recognizing it's a home of endangered species. And I understand there's been efforts to change the way the pool is managed and cleaned, and there's been daylighting that's gone on some of the spring runs. Could you touch on those things?

Bill Bunch [01:03:48] Yeah, sure. So, yeah, swimmers do disturb the bottom habitat. And so, that's why there's incidental take or incidental harm to the species, and that's why the City was required to get a permit to manage the pool and allow the swimming to continue.

Bill Bunch [01:04:13] But the conflict between human enjoyment and protection of salamanders is less than you might think. They are, as I said, mostly found right at the spring heads. So, the big spring in the pool is quite deep. And so, it's not where you have a bunch of people stomping around wading, you know, and destroying their habitat directly. It's too deep for them to mess with.

Bill Bunch [01:04:45] They're quite small and secretive. So, even if you have a mask and snorkel and dive down and try to hold your breath a little bit, you can almost never find them that way.

Bill Bunch [01:04:57] The other two springs that they're found in at Barton Springs - the Sunken Garden Springs and Eliza Springs - those are fenced off and the City is required to manage them as salamander preserves. So, there's no disturbance from people there.

Bill Bunch [01:05:18] And then with Eliza Springs, they did reconfigure, they spent quite a bit of money to reconfigure the outflow from that spring into a sort of manmade surface little creek run, small creek run, whereas before it was just in a pipe. So, there's been some habitat restoration there.

Bill Bunch [01:05:44] The most amazing thing, though, is how the City was forced to change its management practices to protect the salamander. And those changes made the pool vastly more wonderful for human swimmers as well.

Bill Bunch [01:06:05] So, before the listing, the City was using chlorine, not to chlorinate the water, but as a cleanser and algaecide to scrub on the walls to kill algae. And it's highly toxic stuff.

Bill Bunch [01:06:26] They were also actually dragging a heavy chain across the bottom to kill and remove any sort of native aquatic plants that might take root in the bottom of the pool.

Bill Bunch [01:06:41] So, they were trying to manage it as if it was your standard, you know, municipal public park swimming pool, which is crazy.

Bill Bunch [01:06:52] And what was happening as a result of those tactics, with additional fertilizer and wastewater in the watershed, the nutrient loading to the pool and into the aquifer and springs has really gone up.

Bill Bunch [01:07:12] And so we started getting these really nasty algae blooms in the pool. There was a couple summers, actually, where the pool, you couldn't even swim in big chunks of it because there was just giant, nasty algae mats.

Bill Bunch [01:07:29] And this was all before the salamander was listed. Once we got it listed, then they came in. The biologists were like, "Well, we need to restore the native aquatic plants. And we have to stop chaining. We have to stop using chlorine. And we have to start managing this pool as a natural, a nature preserve, that is a nature preserve that lets people, you know, enjoy it, too.

Bill Bunch [01:08:01] And Laurie Dries, who's a Ph.D. environmental biologist from U.T., came to lead the City's effort to restore the native plant life in the pool. So, they brought in plants from other springs and planted them. And she worked her butt off to reestablish that plant life.

Bill Bunch [01:08:25] And lo and behold, what they found was the plants, the rooted water plants that are beautiful and provide fish habitat, displace the algae growth. And then the other thing that the plants did, and this was another huge problem, is the pool would be crystal clear early in the morning. But then as the swimmers came in, they would stir up all the silt and sediment off the bottom and suspend that back into the water column.

Bill Bunch [01:09:02] Well, with most of the pool, large chunks of the pool, being now repopulated with native plants, it was not only displacing the algae, but it was holding the silt down, where it could not be resuspended.

Bill Bunch [01:09:23] And so, by managing the pool for salamander habitat and for other, you know, natural aquatic life - fish, water birds, etc. - it became way more beautiful and wonderful for humans to swim in.

Bill Bunch [01:09:48] And that's the path they're still on. And none of it would have happened if we hadn't had listed, hadn't gotten the salamander listed.

David Todd [01:10:00] Great. So, one last question about the pool and maybe the way it's managed. I guess there's always a concern that there's going to be some catastrophe, some sort of terrible episode, where the little salamanders are going to be wiped out. And so, I

understand there's a refugia, a colony of Barton Springs salamanders that are kept offline, sort of ...

Bill Bunch [01:10:30] Right.

David Todd [01:10:30] To make sure there's a population reserve. Can you talk about how that came about?

Bill Bunch [01:10:38] Yeah. So, the City is required to maintain a captive breeding population, which they have over in the Austin Nature and Science Center, on the west side of Zilker Park. And they have an aquarium there where you can see a few of them there.

Bill Bunch [01:11:00] And that's really critical, although, you know, so far we've been blessed and not had to resort to needing those folks.

Bill Bunch [01:11:10] I know that from the biologists who do some of that work, there is some concern that, you know, if you release them back into the wild, you know, would they thrive or not? Because apparently they do, you know, they're not having to hunt for their own food in an aquarium. They're being fed and they're protected from predators, obviously. So, there's some question about, you know, how well would they do, you know, if it came to us needing to repopulate them back into the springs, you know, post, you know, a pipeline broke or a truck spilled or something like that.

David Todd [01:12:02] Okay.

Bill Bunch [01:12:03] But yes, that is an effort. There had been some captive breeding happening also down at a lab in Texas State. I'm not sure if that's still happening. Fish and Wildlife Service has a fish hatchery in San Marcos. And then they had some up in the Dallas Zoo some years back. I'm not sure if they still do.

David Todd [01:12:29] I see. Okay.

David Todd [01:12:33] So, the way you describe these, these salamanders makes them very appealing little guys, but I imagine that they're not as dramatic and charismatic as some creatures, you know, you're arguing to save a blue whale. And I'm curious if you find it a challenge to sort of go to bat for a 2 to 3-inch long salamander.

Bill Bunch [01:13:06] Well, you know, I don't. Yeah. There are people who, you know, they don't get it. They've never seen the salamander. Some of them don't even know what one is. We had one of our federal judges on a salamander case describe it as a reptile - a little bit challenging.

Bill Bunch [01:13:36] But, you know, for me, we, you know, we're part of nature. And it's terribly arrogant for us to think that, you know, one species or another doesn't matter and isn't important or is not as important as us.

Bill Bunch [01:13:56] We're enriched by a rich and diverse and healthy ecosystem with all of its component species.

Bill Bunch [01:14:06] I believe, you know, nature has a right, salamanders and other species, have a right to exist every bit as we do.

Bill Bunch [01:14:16] For those who may not follow that line of thought, they are incredibly useful to us as an indicator: you know, the canary in the aquifer. As I was sort of alluding to earlier, if we have salamanders in our springs and in these cavernous limestone aquifers, we know the water's good and when it's good for them, it's good for us. And so, protecting the salamanders is protecting us.

Bill Bunch [01:15:01] And Barnes Springs is the life source for the city. I mean, Austin literally would not be here, but for the Springs. The state capital was located here because the Springs was the reliable source of water supply. We now have the dams on the Colorado River in the Highland Lakes, but the river will dry up and is not a reliable source without those dams. The Springs have never dried that we know of. And our city water rights and water supply, even though we're getting it from the river now, are based on Barton Springs.

Bill Bunch [01:15:43] Those reservoirs are silting up. And with climate change reducing inflows, and potentially reducing inflows rather severely in the watersheds further to the West, because the Barton Springs watershed is further east than the watershed for Lake Travis, Lake Buchanan, there's already good reason to believe that it's a more reliable source going, you know, in the face of climate change as well.

Bill Bunch [01:16:24] So, we need we need the Springs protected for the city, for our economy, for everything we do.

Bill Bunch [01:16:34] And, you know, it's the spiritual and cultural center of the community as well. It's one of the few places in the world, literally, where you have this spectacular, beautiful natural spring coming out in the heart of a city, that, because of the watershed is further out in the Hill Country, it's still very clean, high-quality water, except, you know, right during and in the few days after a big storm where it can get pretty nasty from the urban runoff.

Bill Bunch [01:17:12] And, you know, if we lose the Springs, we're not going to be too far behind.

Bill Bunch [01:17:20] So, that would be my pitch for it being worth it to make the investment to save the Springs.

Bill Bunch [01:17:31] And while we've done really well buying some of the watershed lands, I mean, the total amount we spent, to-date, as a community, buying Barton Springs watershed lands, I believe, is between four and 500 million. I mean, there's one intersection on I-35 at 290, that we spent more than that on one intersection. We spent close to a billion dollars building Water Treatment Plant 4 which we never even needed and we still don't need. We're looking at spending, you know, in the ballpark of two billion dollars to build a convention center that almost nobody will ever use.

Bill Bunch [01:18:21] I mean, the list of of boondoggles where, you know, our political machine has delivered to us as priorities for spending is rather sad.

Bill Bunch [01:18:39] And there's a powerful case to be made that we need to find a half a billion dollars real quick to buy up as much of that half of the Barton Springs watershed that's still up for grabs as we can possibly buy up, before it's too late.

Bill Bunch [01:19:00] And that's cheap compared, even with the phenomenal real estate values these days, compared to not doing it and losing what this means for us.

David Todd [01:19:17] And so, speaking about what these salamanders mean and what the springs mean and the aquifer, I wonder if we could sort of drill a little bit to what the salamander might mean. And I think you touched on, you know, its right to exist and that there was a spiritual quality. And I was wondering if you would go so far as to say that a salamander has a soul, that an individual, two or three inch salamander has some sort of metaphysical value to it.

Bill Bunch [01:19:58] Yes, I would. I mean, I think that, you know, as science advances, we're learning that, you know, animals and even plants, you know, have an ability to perceive and learn and share a whole lot of our characteristics, more so than we ever imagined.

Bill Bunch [01:20:26] And especially with these species that are long-lived, that are clearly learning, you know. They know where they're supposed to be. They know how to feed themselves. They, you know, they reproduce and have their young.

Bill Bunch [01:20:45] You know, that's not my field of study. But I look at them, when I look at them, you know, in an aquarium or when the biologists let me look at them in the shallow water inside the protected Eliza Spring where you can, that's the easy place to see them because it's only four inches deep. And since it's protected, there's no fish in there. So, they're not hiding as much. They'll hang out, you know, where you can see them. They look like individuals to me, you know, with personalities.

Bill Bunch [01:21:24] But that's just me.

Bill Bunch [01:21:28] I did have the good fortune to travel to Slovenia in Europe, which is known for having what they called the "classical karst". So, it's a cave-forming limestone region, you know, like where these springs come out of here where, you know, there's lots of caves.

Bill Bunch [01:21:57] But it's where these Slovenian scientists and some German scientists first figured out the whole process of how the slightly acidic rainfall dissolves the calcium carbonate rock and creates, you know, dissolves it and then redeposited when the chemistry changes ever so slightly. So, that the rock dissolves out to create caves. And then you get these spectacular cave formations - stalactites, stalagmites, speleothems, etc.

Bill Bunch [01:22:38] And they have some spectacular caves there, one of them being a UNESCO World Heritage site, where they have the Slovenian giant salamander. *Proteus anguinus*, is the scientific name.

Bill Bunch [01:23:00] And the legend has it, back from the old days (they have castles there), that these cave salamanders ... They look exactly like the Barton Springs salamander, only instead of being, you know, three inches there, they're like 13 inches. They're huge. And they live, they've been known to live 100 years, and perhaps longer. And they just sit there and, you know, maybe they get a water bug comes by that they eat, you know, once every nine months or something like that. So incredibly slow metabolism that equates to long life.

Bill Bunch [01:23:44] But the legend was that they were dragon larvae because, you know, they would wash out of the caves, you know, the underworld, when there was big storm

events and they'd get flushed out. And, you know, they looked so weird and they have these long arms, you know, almost like human arms, and their nickname there is "human fish" because the arms and legs look like human arms and legs. And then the body is kind of like a human body.

Bill Bunch [01:24:22] But they, you know, those are fully cave-adapted. So, they have no eyes at all. They can't see, you know, they have limited pigment.

Bill Bunch [01:24:33] But when you see those salamanders, it's like, "Wow, this is amazing".

Bill Bunch [01:24:39] And the *Proteus anguinus*, it's the bald eagle of Slovenia. It's their national mascot. They have songs about the salamander. They celebrate it in lots of ways.

Bill Bunch [01:25:00] And it's really interesting because, you know, a fabulous example of parallel evolution where, you know, they're not related to our salamanders. But they evolved to be almost the same, just a lot bigger. And because that karst is connected, it's much more developed karst, there's only one species.

Bill Bunch [01:25:27] Whereas, you know, we've been talking about the Barton Springs salamander, but now there's been many other species of salamanders discovered in our Hill Country karstic aquifers, cave-forming aquifers. And they have one big one because those caves are all connected. Whereas here, we have pockets of karst that are isolated from other pockets of karst. And so, each spring area almost has its own species.

Bill Bunch [01:26:04] We just petitioned another one to be listed endangered last year that's from a few springs out on the Pedernales River, near Hamilton Pool.

Bill Bunch [01:26:16] But I'm not sure why I brought up the Slovenian salamander, but it inspired me that our salamanders could come to be recognized as special to us in an environmental sense and a cultural sense, like they have, like the *Proteus anguinus* has been in Slovenia.

David Todd [01:26:45] I get you. Yeah.

David Todd [01:26:48] So, you know, we talked mostly about the Barton Springs salamander, but I'm wondering, like with the listing that you've proposed for another salamander near the Pedernales, is the Barton Spring salamander part of a whole suite of species that have similar problems and concerns?

Bill Bunch [01:27:10] Yeah. These, you know, morphologically these species are very similar, but the scientists, you know, mostly at U.T., but also some at Texas State, and there's some now up at the University of Texas at Arlington as well, I want to say there's 8 to 10 species now that are fully understood to be their own species in the different pockets of springs and different pockets of karst in the Texas Hill Country.

Bill Bunch [01:27:50] And there is sort of a common pattern which we now see at Barton Springs, where there's one, like the Barton Springs Salamander, that's mostly right around the spring openings. And then another one that's evolved that's more fully aquifer-adapted, so down deeper in the aquifer where they have completely lost their sight, you know, the eyes are not there at all, and pretty much completely lost the pigment. So, they're adapted to the entire life being in the dark.

Bill Bunch [01:28:34] But again, morphologically, functionally, lifecycle-wise, very similar. Long-lived, similar, you know, feeding, reproduction. You know, they don't metamorphose. They're in the water the whole time. And they all require this, you know, beautiful, clear, constant-flowing water that we have here in the Texas Hill Country.

David Todd [01:29:06] Okay. Thank you.

David Todd [01:29:10] So. I noticed that, and I think you brought this up earlier, that the Barton Springs salamander's formal name is *Eurycea sosorum* is named after the Save Our Springs movement. And I was wondering if you feel like, you know, this political and legal campaign that you've been associated with for so long is pretty much locked in, tied in, with this salamander. You share a name, in a sense, and an origin story.

Bill Bunch [01:29:48] Yeah. Yes, we are inextricably linked. And we're still committed to protecting the salamander as well as it's, you know, spring and aquifer habitat. We want, we love the water, we love the wildlife. The fish in Barton Springs are incredible, the waterbirds that live there. I mean, we really have an amazing natural system that's hanging on, you know, right here in central Austin, in spite of, or despite the, you know, the incredible urbanization that we've seen already and that doesn't seem to be slowing down any time soon.

Bill Bunch [01:30:44] And, we, you know, we have gotten off on some other issues, but we do need to be circling back now, especially with the groundwater pumping in the upper watershed from the Trinity, where there's definitely some harm that's happening to the species, where even though the courts have been more strict about causation in looking at endangered species implementation, Endangered Species Act implementation and enforcement, I do believe there's some legal threats to the species that we need to be paying closer attention to that we've not followed as closely as we should have.

Bill Bunch [01:31:32] And I do see the salamander playing a critical role in helping us keep those smaller springs flowing in the upper part of the watershed that then send water also down to Barton Springs itself.

David Todd [01:31:50] So, I think some of us think of S.O.S. and we think of Bill Bunch, and we think of them as wed very closely. And I was wondering, you know, after 30-plus years of this, how you manage to continue forging on. You know, you are not a nonprofit. You're a living, breathing human being that has other interests. And I'm just curious how you manage to stay focused and stay positive. It can't be easy.

Bill Bunch [01:32:31] Well, sometimes it's harder than others. There's definitely been times when I've felt pretty burned out and more discouraged. But we've had a community of supporters, donors. I mean, most of our funding comes from individual donors. You know, we haven't tried to grow into being a big, giant non-profit.

Bill Bunch [01:33:03] But, you know, we have the expertise and the institutional knowledge now. We have the science. We have a small staff of lawyers with, you know, environmental educators working with us. And we're continuing to make a difference. You know, not as much of a difference as we should, but we make a difference. And so, because of that, we keep doing it and we feel blessed, or I'll just speak for myself: I feel blessed to be able to continue doing this, you know, and making a living. I mean, I'm certainly not getting rich at it, but I'm providing for myself and my daughter and enjoying it.

Bill Bunch [01:33:52] And, you know, I live in Zilker Park, so I get to go swimming in Barton Springs almost every day in the summer, and then maybe two or three days a week in the winter. And so, yeah, I've, you know, sort of decided this was my home and, and, and I want to do what I can to protect those parts of our natural heritage that are at greatest risk of being lost.

David Todd [01:34:25] So one last question. You mentioned that you live in Zilker Park or near Zilker Park, the Zilker neighborhood, and you manage to go swimming. And so, I'm wondering if you feel some sort of personal affinity as a swimmer from the age of eight to the current day with this other little creature that enjoys the same place that you like to splash around in?

Bill Bunch [01:34:57] Yeah, I think I do. They're cool critters. I don't see them that often in person, but I love knowing they're there. And when I do get to see them, I'm pretty excited about it. And occasionally I do get to go along with some of the biologists who are counting and doing the monitoring. And I love that. And they let me tag along and they get to do the science on them. And I can watch.

Bill Bunch [01:35:38] But otherwise, you know, I don't want to bother them. You know, some wildlife observation, you know, innocent as it might be, can be, you know, disruptive and and extractive. And I try to avoid that, being in that situation.

Bill Bunch [01:36:01] So, yeah, sometimes it's just nice to know that they're right down there on the bottom of the pool and I'm swimming over them, and I don't need to see them. I just need to know they're down there and hopefully they're happy.

David Todd [01:36:19] Okay. Well, Bill, this has been lovely. We talked about a lot. But is there something that that we gave short shrift to, that I just skipped over, overlooked, that you'd like to mention?

Bill Bunch [01:36:36] I guess one thing I'd mention is, you know, sometimes, you know, and I'll even catch myself being grumpy about, you know, our government institutions not working the way they should. But there have been really critical junctures, including, you know, when we were trying to get the Barton Spring salamander listed as endangered, that you had scientists inside the U.S. Fish and Wildlife Service, at the City of Austin, at Texas Parks and Wildlife Department, that had incredible integrity, who were making the frontline recommendations and observations that, yes, this species is at grave risk of extinction because of these development pressures and the side effects from urbanization of the watershed.

Bill Bunch [01:37:42] And if we didn't have those people working inside our government institutions, not for much money, often being maligned as, you know, bureaucrats and etc., you know, we'd be in bad shape.

Bill Bunch [01:38:01] So, I really have tremendous appreciation for our young folks, especially, and those who stick it out over time, to stay in public service where, you know, rarely are they getting a pat on the back. And they're certainly not making huge piles of money, but they're also doing something that they love, that's, that's important. And they were so critical along the way to have the species protected like it is, and to have Barton Springs pool, be, you know, changed in its management to more of a nature preserve rather than, you know, a city swimming pool.

David Todd [01:38:49] Got it. Well, Bill, always nice to spend some time with you. Learned a lot.

Bill Bunch [01:38:57] Well, I hope that got, that did what you were looking for, more or less.

David Todd [01:39:04] It's a great story and it's very inspiring. And I wish you many more years of good deeds.

Bill Bunch [01:39:11] Yeah, well, thanks. Appreciate your interest as well.

David Todd [01:39:16] It's a pleasure. Thanks a lot.