

**TRANSCRIPT**

**INTERVIEWEE:** Hannah Bailey

**INTERVIEWER:** David Todd

**DATE:** December 16, 2020

**LOCATION:** Houston, Texas, by telephone

**TRANSCRIBER:** Trint, David Todd

**SOURCE MEDIA:** Google Voice, MP3 audio file

**REEL:** 4042

**FILE:**

AttwatersPrairieChicken\_Bailey\_Hannah\_HoustonTX\_16December2020\_Reel4042\_NoiseReduced&SignalAmplified.mp3

**Google Voice** [00:00:00] This call is now being recorded.

**David Todd** [00:00:03] Good morning, Hannah.

**Hannah Bailey** [00:00:05] Hi, how are you this morning?

**David Todd** [00:00:08] I'm fine, I'm fine, thank you very much. Nice of you to call.

**Hannah Bailey** [00:00:11] Oh, not a problem at all.

**David Todd** [00:00:13] Well, thanks for taking some time out to talk about all the interesting things you've been doing. And I hope you know how much we appreciate it.

**Hannah Bailey** [00:00:23] Not at all. I appreciate being able to talk about the prairie chickens any time I can, so...

**David Todd** [00:00:29] Well great! Well, maybe a place to start is just to explain a little bit about, you know, sort of what we're about and what the purpose and sort of context for this is. And I want to make sure you understand this and feel comfortable with it.

**Hannah Bailey** [00:00:54] Oh absolutely.

**David Todd** [00:00:54] OK, well, with your approval, the idea is to record this interview for research and educational work, that would be on behalf of the Conservation History Association of Texas, a nonprofit in the state, plus to be used for a book and a website for Texas A&M University Press, and then for preservation at an archive at the Briscoe Center for American History at the University of Texas here in Austin. And you, of course, would have all equal rights to use the recording as well. I wanted to make sure that sounds good to you.

**Hannah Bailey** [00:01:35] That sounds absolutely amazing.

**David Todd** [00:01:36] Well, excellent. Well, maybe I can sort of set the stage for what we'll be talking about today and then we can get into some questions and hear what you, what's on your mind.

**Hannah Bailey** [00:01:55] Sure.

**David Todd** [00:01:55] All right. Well, it is December 16th, 2020. My name's David Todd. I'm representing the Conservation History Association of Texas. I'm in Austin. And we are

conducting an interview with Hannah Bailey, who was at the Houston Zoo from 1997 through 2020, where she ended as curator of birds and animal records, I believe.

**Hannah Bailey** [00:02:25] Yup.

**David Todd** [00:02:25] Throughout her career there, she worked with birds care, incubation and hand-rearing and exhibits and records, transport and more at the zoo, and then also worked with her colleagues at other institutions through the Association of Zoos and Aquariums. And I guess maybe one of the focuses today will be that she was heavily involved in the breeding and reintroduction of the Attwater prairie chicken. She's based in Houston as I understand and this interview is being done by telephone.

**David Todd** [00:03:00] And our goal today is to talk a bit about her life and career and then to chat about the Attwater prairie chicken, and its, its decline and then the efforts to breed it in captivity, release it to the wild and gradually restore the bird. So that's the plan.

**David Todd** [00:03:17] And I have some questions for you.

**Hannah Bailey** [00:03:22] Absolutely.

**David Todd** [00:03:24] OK, well, the first thing I want to ask about of course was your childhood and whether there might have been people or places who were a big influence in your interest in working with animals and birds in particular.

**Hannah Bailey** [00:03:40] I don't recall specifically any people that, you know, really influenced my love of wildlife. I was, I was a pet-crazy child. So my I did at one point talk my grandmother, much to my parents' chagrin, into getting me ducks. So we had five just domestic ducks in our backyard for probably about a year before they, we re-homed them. But I, I spent just a lot of times outdoors. I lived in Mesquite, Texas, until I was about eight. And as was fairly custom at the time, parents would, especially in the summer, send the children out. And you went outside and you came home when it was dark. So we spent a lot of time, you know, riding bikes, playing in a nearby creek, just, you know, doing outdoorsy things.

**Hannah Bailey** [00:04:55] One of my earliest memories, though, of my interest in wildlife, I guess, was in our backyard, our air conditioner unit sat on a concrete slab and it had eroded out underneath and there was toads that would be under there. So in the summer, every morning, I would go out and drop my hand under there, feel around, get all the toads out, count them and then put them back, just to make sure, you know, my toads were all still there. I remember very specifically wanting to mark them, and this was when I was like four or five and my parents would not let me paint them, which is now I realize is a good parental decision, but I was very disappointed when I tried to mark on them with crayons because I wanted to be able to tell them apart, and I couldn't.

**Hannah Bailey** [00:05:59] And then just later on, so we had moved up to Dallas and my next door neighbors had a purple Martin house and I would spend hours in the backyard watching the purple martins and you know, with my binoculars and seeing who had chicks in the nests and, you know, trying to figure out just what was going on with the purple martin colony.

**Hannah Bailey** [00:06:31] And then every, you know, every baby bird or, you know, injured wildlife we came across I would, you know, I would try to rehab that to, you know, being able

to, you know, live safely. And and I did that actually with several sparrows and blue jays and, and things like that.

**Hannah Bailey** [00:06:54] And I remember the other thing that kind of influenced just my love of birds in general is when I was about 10 or 11, my parents got me the Audubon Field Guides for U.S. birds. And I very carefully went through and notated all of the birds I wanted to see, and I still remember looking at a picture of a cedar waxwing when I was, you know, 10 or 11 and and wanting to see that bird up close and was very excited when I finally did. So that was that was mostly what was influencing my, my love of animals.

**Hannah Bailey** [00:07:33] But the interest in birds just was, I think that really came along with, with watching that purple martin house. I was also one of, you know, those, I don't know if you would say weird children, but I spent a lot of hours in my backyard with a, trying to trap birds. I had a cardboard box with a stick attached to a string and I would put birdseed under it, see if I could, you know, catch a bird and look closer at it. That's what I always wanted to do. I wanted to see the intricate details.

**David Todd** [00:08:21] This is so interesting, it sounds like you're self-taught and self-encouraged and.

**Hannah Bailey** [00:08:28] Yeah, and I think my parents and family were, you know, they were always encouraging of my curiosity about these things, but we had a rule about not bringing snakes into the house because I would also catch a lot of snakes. But other than that, they, you know, they were, were encouraging and, and fine with me, you know, digging around in the mud or, you know, looking at information. And of course, this was before the Internet. So if I wanted to know something more, you know, it meant a trip to the library or, you know, and, and really investigating these things, so.

**David Todd** [00:09:09] You know, this is sort of like the time before the Internet when gosh you had really had to work for learning about the world.

**Hannah Bailey** [00:09:18] Oh, yeah.

**David Todd** [00:09:21] Well, maybe while we're talking about learning, I understand that you went to Texas A&M and earned a degree there in math, statistics, ...

**Hannah Bailey** [00:09:37] Yes.

**David Todd** [00:09:37] ... and mathematical modeling. Were there some mentors there that might have had an effect on you and might have touched you, encouraged you to look into, you know, efforts with wildlife?

**Hannah Bailey** [00:09:50] Yeah, sort of. There was actually, and it wasn't necessarily teachers. I went into math, actually, because I wanted to, I had a very different career path in mind when I started college. I, you know, I grew up in, my family was such that it just was the natural progression: you graduated from high school, you went to college, you got a degree, you worked in an office, you know, and that's what you did. So I never really envisioned careers in wildlife anything.

**Hannah Bailey** [00:10:29] So there was a little bit of irony that I went to Texas A&M, being that it has a really incredible Wildlife and Fisheries Department, which many of my friends

were taking classes in wildlife and fisheries. It was actually probably about my third year at A&M when I was over at a friend's house and they had a kind of a courtyard and we were all sitting around talking. It was early evening. And while they were talking, I was catching tree frogs. And one of them, who was a wildlife / fisheries major, asked me, Hannah, why are you not in wildlife / fisheries? You love you know, you love hunting out animals. You love learning about them. And it was it was that moment that I really just went, well, I, I don't know why I'm not.

**Hannah Bailey** [00:11:32] And I only had about a year left of school, so I did during that last year, actually year and a half, take a couple ecology courses and courses more about wildlife. Not really for any other reason than I could fit them in as electives, and I was interested in it.

**Hannah Bailey** [00:12:00] It wasn't until I got out of college that I started investigating and learned that I might actually be able to work for a zoo. And to do that, I had moved to Houston for an internship at Unocal Petroleum and I was in Houston and discovered a program at Houston Community College that at the time was called the vet paramedic program, which was basically like a veterinary technician program, except without the, that tech certification. And they had a relationship with the Houston Zoo where students of theirs could volunteer with an animal department, whereas at the time most of the volunteering at the zoo was through their docent program, which is an excellent program. But the docent program had more to do with educating the guests instead of working directly with the animals. So it was through the, the vet paramedic program that I started volunteering in the department at the Houston Zoo. And it was from there that I basically stepped away from any, any work with my actual, for any formal work with my degree and became a keeper about a year after I started volunteering.

**David Todd** [00:13:40] And so this would have been. In the mid '90s, '97 is that right?

**Hannah Bailey** [00:13:46] Yeah, I started I started officially being employed in '97, I started volunteering in '95 and at the time I was working. So I moved to Houston for an internship. And then after that internship, I started working for, in banking. I worked for what was at the time Bank One Texas, which is now Chase. And so, you know, I did a lot of different things at the bank. I did some branch banking. I helped set up a call center. I did the cash reconciliation for transactions and stuff like that.

**Hannah Bailey** [00:14:30] But I kind of I knew early on in those days that that was not something I wanted to do for a living. And when I started volunteering at the zoo, it was just one of those things that I thought. And actually it was, I remember a very specific day. I would I would volunteer every Sunday. And there was one Sunday, and I guess it was late '95, maybe early '96. But it was a really cold weekend and I got up like I normally did and went in and the, the staff, particularly one of the supervisors, was very shocked that I came in and he said, well, you're a volunteer. You know, it's 27 degrees outside. And I was like, I said I'd be here.

**David Todd** [00:15:23] Yeah.

**Hannah Bailey** [00:15:23] And I think that was kind of the key that made them realize that, you know, I could be a very beneficial keeper if I wasn't scared of coming in at, you know, when it's 27 degrees and misty, you know, and I was still just as happy to do the job then as, you know, I would be on any other day. So...

**David Todd** [00:15:46] Sure. Yeah. It showed a real commitment and dedication. Well, it's so interesting when you know, a lot of people have a job and they make a living and have a career, but it may not be a calling and it sounds like you may have gotten the call. Is that fair to say?

**Hannah Bailey** [00:16:03] That's kind of how I would put it. Yeah, I mean, I, I just always felt comfortable in that, in that zookeeper position. And the thing I really loved that I think a lot of people don't know about zookeepers is they really are Jacks of all trade. I mean, yes, we are taking care of the animals, but there's I mean, like, you know, you come across drains that back up, you learn a little bit of plumbing. You have to fix something in an enclosure. So you know, you use a lot of tools. I often joke that my mom taught me how to use power tools before she taught me anything about makeup, which is pretty evident by, how I'm able to put on makeup. But I'm really good with a chainsaw.

**Hannah Bailey** [00:16:56] But so it was, it was being able to use all of those skills plus, the, to me what I loved about it was, you know, I knew about birds, I had, you know, done enough self-study that I could describe, you know, the body parts and things like that. But this position let us work with the veterinarians. And we learned a lot about, you learn a lot about the medical side of it, and then just watching the different breeding behaviors and things like that. And what's fascinating about zookeeping that I think a lot of people don't realize is, there's so much we get to see that field research doesn't get to, that they only hope to see. And so we're very essential in a lot of those natural history things that field researchers want to know but, but can't learn because they don't see the birds often enough or see the animals often enough to really understand it.

**Hannah Bailey** [00:18:02] To me, it reminds me, you know, people have asked me about, you know, I watched the, the David Attenborough special on the life of birds. And it must be so cool to see that. And it is. But what they don't realize is the thousands and thousands and thousands of hours that those researchers had to sit and watch nothing before they got the footage they needed. And while we don't see that behavior every day, just by being there every day and seeing the normal course of action for all of these animals, we see a lot of behaviors that people don't. And it's, it's amazing.

**Hannah Bailey** [00:18:45] And I think, you know, the typical thought of being a zookeeper is that we get to, you know, we get to hug and kiss the animals, which is not true. They are wild animals. But the beauty of it is being able to see these animals do their breeding display or raise chicks or raise offspring or learn about the, you know, the incubation needs of a specific species. All of this is just, it was just sort of icing on the cake for me, for moving into this career.

**David Todd** [00:19:21] Well, talking a little bit about, you know, witnessing creatures up close and maybe even in more intimate detail than, than field researchers. Could you tell us a bit about this particular bird, the Attwater prairie chicken? Maybe something about its natural history, and the mating displays that it's so famous for?

**Hannah Bailey** [00:19:48] Yes, absolutely. So the Attwater's prairie chicken... the first thing I typically tell people is while I do love domestic chickens, the biggest questions I've gotten before is, well, it's just the chicken. Why are you working to save it? Not a chicken. It's a grouse, which is a different type of bird in the same family. So I do try to refer to it fairly often as the Attwater's prairie grouse, although that's not its official name yet.

**Hannah Bailey** [00:20:22] But the, so about the prairie chicken: it is basically a chicken-sized bird. Males or about a kilo in weight and females are slightly smaller. Most of the year, your average person would describe it as sort of a nondescript brown bird. But if you look closer here, they are actually much more complex than that.

**Hannah Bailey** [00:20:55] But the real, I guess the real beauty, or the real kind of interesting thing about the Attwater's prairie chicken, or grouse in general, is their breeding display. In the spring, the males start getting very colorful, their feathers stay the same, but they have two air sacs on the side of their neck that are concealed most of the year. In the spring, those air sacs turn bright yellow, with kind of a light purple around the edges. And they also get eyebrows. There is a patch of skin above their eye that turns very bright yellow and engorges slightly. So it's very obvious.

**Hannah Bailey** [00:21:38] Their nickname is the "Cupid of the Prairie." And they, the way their breeding display works, which is really fascinating, is they are what's called a lek-displaying species, which means all of the males gather in one area, which is called a lek, and they display. And basically the way I describe it, and I think most Texans would understand this, is it's like watching a group of teenage boys on a Friday night football game showing off for the girls that they want to talk to, but they are too scared to. So, there's a lot of you know, there's a lot of, you know, big talk and, you know, a lot of huffing and puffing and big displays and hopes that the girls will notice them.

**Hannah Bailey** [00:22:34] It's, it's similar with the male Attwater's prairie chickens. They all display in this area. There's some fights. I mean, it can get, it can get kind of touchy. They can injure themselves in fights, but mostly they are so hormone-driven, they are just thinking about their display. And what their display is, there's three parts to their display. The first part is a stomping. They do a quick stomp with their feet on the ground and then they lower their head and inflate their air sacs that look like two oranges on the side of their head. And then they make their, their breeding call, which is called the boom. It sounds kind of like if you were to go over a empty Coke bottle, kind of a whoo-whoop noise. And the females all kind of hide in the grasses around the side of the lek. And they choose which mate they want to breed with. So it is a female choice situation, basically.

**Hannah Bailey** [00:23:48] And one of the things that I also like to talk to people about is because, I'll bring up again, you know, so many people have seen the, the, the PBS series Life of Birds or Birds of Paradise, where Attenborough's talking about these birds and they're so fascinated with these elaborate displays of birds, yet they don't realize that, especially with the Attwater's, or other species of grouse, if you live in other areas of the country, this type of elaborate display is going on in their backyards, basically, so they don't have to go to the far reaches of the earth to see it. A lot of times they might have to travel, you know, 45 minutes out of town to see something that's spectacular.

**David Todd** [00:24:34] You know, it's, it's interesting listening to you describe the display, the dance, and it reminds me of, of dances that I've see Native Americans perform, I think they're Pawnee or Cree. Is there any connection or is that just a kind of coincidence?

**Hannah Bailey** [00:24:57] No, there is absolutely a connection. Most Plains Native American tribes have some sort of prairie chicken dance. They were, they were a mark of time for the, for the tribes. You know, this was the true mark of when spring was beginning, you know, by these breeding displays. And there was a certain, there is a reverence for most native species,

I think, in Native American tribes, in the mythology, that there would be usually a prairie chicken dance of some sort.

**David Todd** [00:25:46] Interesting, they're very observant people.

**Hannah Bailey** [00:25:52] Yes.

**David Todd** [00:25:54] Well, and I guess at one point the prairie chickens were or were relatively common. I've read that there were some million of them maybe on six million acres of Texas coastal prairie in 1900, but ...

**Hannah Bailey** [00:26:09] Yes.

**David Todd** [00:26:10] They dropped. I think I've read there were about 9000 by 1937, and by the early '90s, it dropped below 500 and then really collapsed by the mid '90s. Can you talk a little bit about the decline of the bird? What was going on there?

**Hannah Bailey** [00:26:28] Oh, absolutely. So, I'm going to start by saying I'm not a species biologist, but most of what I know, I have learned from the biologists that have worked a great deal with these species.

**Hannah Bailey** [00:26:45] If you look at the Texas history from that time, coastal prairie usually is the prairie that is within one hundred or so, usually no further than three counties, from the coastline, basically. And Texas is very, very good, the, the land along the coast is very good for rice farming. And if you look, the rice industry really started taking off in that time, and so a lot of coastal prairies were converted to rice and other agricultural fields, and not all agriculture is bad for prairie chickens. But rice in particular, because of the flooding of the fields, is not great for prairie chickens. Pretty good for waterfowl, but not, not great for prairie chickens. So that really took away a lot of the prime habitat for them.

**Hannah Bailey** [00:27:52] And the other things that kind of happened during that time was coastal populations started to increase a whole lot as well. So city development, things like that, were starting to take over the prairie. And unfortunately, when you get human encroachment, you also tend to get invasive species.

**Hannah Bailey** [00:28:15] If you look at the rise and fall of rice farming along the Texas coast, you will see that in the early 70s, rice farming had declined slightly and some of the, the fields were allowed to go fallow again. And prairie came back and you started to see a slight bump in the late '60s, early '70s of the prairie chicken numbers again.

**Hannah Bailey** [00:28:49] And at that time was also in the early '70s, was when the red imported fire that was discovered in, I believe it was, Alabama, had started to make its way across the southern United States and it had become established in the Gulf Coast region. It took us many, many years to figure this out. We know, or researchers know, that fire ants can cause a problem to many species - quail, even whitetail deer - fire ants have been known to attack and kill newborn fawns. And so we always sort of assumed that part of the fire ant problem was predation on newly hatching eggs or chicks.

**Hannah Bailey** [00:29:47] But through research over the past 10 years, I guess, one of the things that we determined is, well, yes, fire ants will predate on newly hatched chicks and things like that. That hasn't really been the biggest problem. The biggest problem is that fire

ants eat small, soft-bodied insects that are needed for the chicks to survive. So you would have prairie chickens still breeding and nesting and hatching eggs, but the chicks weren't surviving because there was not enough food sources and unfortunately they don't eat fire. Sorry about that.

**David Todd** [00:30:31] So the fire ants were eating invertebrates that the prairie chickens typically would have relied on too? They were sort of competing with one another?

**Hannah Bailey** [00:30:39] Yeah, basically, yes. And so you would still have, I think I'm getting these statistics right. It's been a while since I've read the paper, but the, from the biologist out at the Prairie Chicken Reserve, National Wildlife Reserve, did do studies on insect availability in areas that were treated for fire ants versus areas that were not treated for fire ants. And what I found interesting was that both had the same, I want to say, like density of insects. Or, like, you know, an acre would yield the same weight of insects, basically. But the problem is that in the area that was non-treated, those insects were much bigger and therefore not an available food source for the chicks. Whereas in the treated area, the insects, there were a lot more very small, soft-bodied insects that make up the majority of the chicks' diet. Adult prairie chickens eat more seed and forbs and things like that, so they're not as reliant on insects, but the chicks definitely are.

**Hannah Bailey** [00:32:00] And so once fire ants became really established along the Gulf Coast is when you started seeing these very, very quick and large declines in species like the bobwhite quail was very hard hit as well, being another ground-nesting species that needs small soft-bodied insects.

**David Todd** [00:32:26] This is really interesting, sad, but really intriguing.

**Hannah Bailey** [00:32:30] Yes.

**David Todd** [00:32:30] The science behind it is fascinating.

**Hannah Bailey** [00:32:32] Yes.

**David Todd** [00:32:34] So it sounds like the Attwater prairie chicken's decline is shared with other grouse - the heath hen, the lesser prairie chicken, the sage grouse. Is it a similar problem with these other birds. Or what do you think? Is it coincidental, that they were all hurting?

**Hannah Bailey** [00:32:57] Some similar problems, but a lot of it has to do with habitat loss as well. And then, not only, prairie chickens, some species of prairie chickens, or prairie grouse, are somewhat adaptable to the changing of the prairie. But, like sage grouse that are dependent on sage for a food source, obviously, is, that's an issue for them. They're losing their sage brush prairie. Lesser prairie chickens - they're just, the prairie is vanishing.

**Hannah Bailey** [00:33:39] I think people don't realize what an important biohabitat prairie is. I think Houstonians are starting to learn a little bit more about that, mostly because prairie absorbs floodwaters much quicker than you know, your front lawn or concrete. And one of the things that has helped Houston over the, you know, the millennia or whatever has been a good prairie habitat to help us absorb our, our heavy rain. But we don't have that anymore. And so, you know, the more we can redevelop areas, you know, large areas of prairie, it will help with flood control.



**Hannah Bailey** [00:34:33] The other thing that I think people don't realize about prairie is, you know, when the average person, I think and this is just an assumption on my part, is asked, what you think of, what is the "wild" to you? They tend to think of things like the rain forests, and prairie is just as diverse as rain forest habitat. But people don't see or learn there, so they think of it as just a, oh, it's just a field. Well that field contains a huge diversity of plant life and insect life and reptile, amphibian, bird, life that people don't see or appreciate.

**David Todd** [00:35:19] It looks like their lawn, but it's, it's just vastly different, more complex.

**Hannah Bailey** [00:35:24] Yeah.

**David Todd** [00:35:25] Is that what you're saying? Yeah.

**Hannah Bailey** [00:35:27] Yeah.

**David Todd** [00:35:29] Well, so we talked a little about the prairie chickens' decline, along with these other grouse. Can you give us sort of a status update on how many prairie chickens remain, roughly, now in the wild? And how about maybe the number in captivity?

**Hannah Bailey** [00:35:48] Yes. So in captivity, I'm far more confident of the numbers.

**David Todd** [00:35:52] Sure.

**Hannah Bailey** [00:35:54] We have about 200 in captivity in the wild. In all honesty, I don't remember the exact count from the spring. They do, they do counts every spring. And I want to say it was, probably, I want to say it was between 70 and 100 this spring, which I know most people are like, oh, that's not very many, which is true, it's not. But we have to remember the one thing, especially when we're talking about the Attwater's, is we're really, when, when we work on the breeding and release program, this sounds harsh, but it's true, we are releasing dinner. It's sometimes easier when you're releasing the apex predator or something. You know, there's less pressure on them or something. But we are releasing one of the things that everybody likes to eat. So we, we hope for, in a healthy prairie chicken population, you have about a 50 percent year-to-year survival rate. What we are striving, while that would be awesome if we could reach that in our released bird population, right now we're around 17 to 19 percent year-to-year survival. And that's due to a lot of factors.

**Hannah Bailey** [00:37:25] The biggest one is about the same time the birds are becoming independent and self-feeding and all of that, is also the time that the world's largest hawk migration comes through south Texas. So you can't, we can't alter their biology to make it so that those two things don't coincide. And it's hard because if we have ten thousand prairie chickens and 10 percent of them, you know, get predated by hawks, that's, that's not great, but it's not devastating. When you have 100 and ten percent of them get predated by hawks, it's a little bit harder on the population.

**Hannah Bailey** [00:38:15] And with prairie chickens, it's really a numbers game. The, you know, if you could get 2000 out there and they could at least replace or replace themselves every year, you'd have, you know, much better shots of seeing increases in population. And having said that, prior to, this was almost 10 years ago now, prior to the 2011 drought, we were actually starting to see significant breeding increases in the wild. We had done some work, we had treated core use of nesting areas of the prairie chicken reserve for fire ants, just to give everybody kind of a head start. And that was showing promise of working.

**Hannah Bailey** [00:39:07] But the drought pretty much kicked us in the teeth, so to speak, as it did many, many animals that year. And since 2011, we've been hit by many catastrophic floods that have unfortunately been, several of them have been during the nesting season. So it had wiped out nests. So, we've run into those issues as well.

**David Todd** [00:39:42] So they're just vulnerable in so many ways, whether it's drought, or flood, or hawks..

**Hannah Bailey** [00:39:50] Yeah.

**David Todd** [00:39:50] It's remarkable. So...

**Hannah Bailey** [00:39:54] Thinking about the hawks was that too, one of the things about the work that the recovery team is doing and restoring native prairie, it takes out a lot of the, there will always be hawks that fly through. But when you restore native prairie and you take out a lot of the, you know, the, the invasive trees or other invasive species, you remove the comfort zones for these birds of prey. And so they're not as likely to just live there and feed off the prairie chickens. So native prairie redistributes the threats to where they're, I want to say, more manageable, I think, is probably the best way to put it. When you have a lot of invasive plants on the prairie, especially if trees are starting to come in, or bigger invasive bush species, that gives birds of prey a place to be, whereas usually they're not going to just be sitting in the middle of the prairie waiting, so..

**David Todd** [00:41:12] They need a perch, it sounds like.

**Hannah Bailey** [00:41:14] Yep, exactly.

**David Todd** [00:41:16] I see. Well, you sort of told us about the status of the, of the bird now and in recent years. Can you sort of turn the clock back to the early '90s?

**Hannah Bailey** [00:41:33] Yeah.

**David Todd** [00:41:34] When I understand the Fish and Wildlife Service, you know, noticed this crash of the prairie chickens.

**Hannah Bailey** [00:41:41] Yeah.

**David Todd** [00:41:42] And chose to turn to captive breeding, which I understand was really not their, their instinct. You know, I think it was a reluctant choice, from what I've heard. And can you tell me about how and why the Service decided to go to captive breeding?

**Hannah Bailey** [00:42:02] I know of it from hearsay, but I can tell you what I've heard.

**David Todd** [00:42:06] Yeah, please.

**Hannah Bailey** [00:42:06] Like this is before, so I'm actually going to kind of compare it to another one. You know, in the '70s when they brought all of the California condors into captivity, there was a huge outcry from many, many environmental organizations saying that this is not what we should do. We should let them, we should let them go extinct with dignity. And while I can sort of understand that I also feel like the pressure that was causing the

extinction was so greatly influenced by human interference that if we could do something, we should try.

**Hannah Bailey** [00:42:55] And I think it was sort of the same thing with the prairie chicken, where, you know, it's, we, the biologists all knew if nothing was done, they would be extinct within a few years. And so what I, from what I understand, I don't, I don't particularly know the mechanisms of how Fossil Rim got involved. But I do know at the Houston Zoo, one of the keepers read an article about the prairie chickens in the paper about how, you know, they're, they're rapidly going away.

**Hannah Bailey** [00:43:37] And the Houston Zoo has an incredible history with galliformes or pheasant-type birds and had bred many, many species that were notoriously difficult to breed or raise in captivity. So it was really a keeper-led initiative to get us involved in this. And it was even the keeper staff for the majority that built the facility for prairie chickens at the Houston Zoo. It was when we were still run by the city of Houston. So supplies were not always the easiest to get. We had very tight budgets, so they built breeding pens out of almost, it wasn't necessarily leftover material, but, you know, it was on a budget.

**Hannah Bailey** [00:44:35] And so we stepped up and said, we want to help. And Fish and Wildlife, who has very little experience, at least with Attwater's, and how, how do you care for these birds in captivity or, you know, under human care, said, "OK, you're, you know, you're in. We'll at least have to do permitting and things like that." And the idea was that we would get greater prairie chicken eggs from up north. We would do that for two seasons to put practice, you know, on. That was a much more stable population. And we got the greater prairie chicken eggs. And while they were still incubating, Fish and Wildlife called up and said, "Well, we're kidding. We're bringing you some prairie chickens from Attwater that right now. We're like, OK."

**Hannah Bailey** [00:45:35] So we started back when they started the program. So the first really 10 years of the program for I think everyone involved was a lot of learning about how you care for these birds. We could, we could care for the adults. That was, that was pretty straightforward. It was raising the chicks that was incredibly difficult. And I often say that they taught us the lessons, because we went into it thinking, "oh, we read a lot of really endangered, very difficult to care for species. This will be no problem." And the Gods of the prairie chickens laughed at us and said, "OK." And so it was very difficult for many years.

**Hannah Bailey** [00:46:35] And through that time, we learned a lot of different things. I mean, we had problems with infertility in the eggs and then we had problems with hatching the eggs and then we had problems with keeping the chicks alive and, you know, all sorts of various things. And we learned something over the first three to 5 to 10 years. Part of that was just trial and error, but other parts of that was just the increase in technology available to us.

**Hannah Bailey** [00:47:10] One of the things we did in the early 2000s was we were finally able to do a nutrition study to decide if we were actually feeding the chicks and also the parents, complete nutritional diets. And the reason why we were able to do that was because the technologies had become cheaper for us to be able to do that, you know, just running samples and, and doing, you know, chemical analysis of the feed to look at micronutrients and then comparing that to blood work of animals that had been released on the prairie to see, you know, how similar their nutrient levels in their blood was. And we were able to make some nutritional adjustments that really benefited the population. And we started to see more success from that.

**Hannah Bailey** [00:48:09] And then other thing that, you know, we didn't even really, it never occurred to us when you have animals in human care, we try to keep them as safe as possible. And so one of the early things we did that, you know, thinking back on it now, I'm like, oh, that's so obvious, is we, we would keep the bird with one male and one female in a pen because we wanted to track genetics very carefully. So it was a little bit of an unnatural setup because the female couldn't choose which male, you know, to breed with. It was kind of chosen for her. And we would put up visual barriers so the males couldn't fight between the pens. And our fertility rates were horrible. And it wasn't until we took down this visual barrier so the males could see each other, the hens could see other males. And we discovered that, yeah, the males might fight a little bit between the pens. They might scratch their faces up a little bit or break a toenail. But it was nothing that was tremendously harmful to the bird. I mean, nothing worse than a scrape of your knees, so to speak.

**Hannah Bailey** [00:49:33] And then we could also watch the females during that. And if she was laying infertile eggs, we would watch her. And sometimes we would notice she would be spending a lot of time, you know, nearest a male that was next door. And that's when we realized we need to figure out a way to give them a little bit more choice. And so I often would joke that my, my zookeepers were incredible readers of the, you know, amorous needs of female patients. Because they would, they would notice when a hen was showing more interest in a male that was near her. And as such, we would always make sure that males, you know, we would, we would set up the birds so that a female, she would be with the most genetically compatible male. But we would make sure that she was genetically compatible with males on either side of her as well. So if we had to switch, switch males mid-game, we could. And it really increased the fertility and hatchability of these birds. So, you know, with little things like that that we just never realized.

**David Todd** [00:50:56] Huh!

**Hannah Bailey** [00:50:58] And we should have learned some of those subtleties.

**David Todd** [00:51:04] Well, speaking of breeding these birds, I think that you served on the Fish and Wildlife Service's recovery team.

**Hannah Bailey** [00:51:16] Yes.

**David Todd** [00:51:16] For the prairie chicken, and that you chaired the Species Survival Plan and its stud book for the bird.

**Hannah Bailey** [00:51:23] Yes.

**David Todd** [00:51:23] And I was curious, you know, how did you manage to avoid inbreeding problems when the population had gotten so small?

**Hannah Bailey** [00:51:35] A lot of juggling around. So we're really lucky in that we did work with some geneticists through the University of North Texas and I want to say the University of Wisconsin, but I'll be honest, I'm, I'm a Southern girl, I'm not real good at my Northern states. But they looked at the genetic diversity of our current population of birds in human care. And then they also looked, they took samples from study skins. And we have lost very little genetic diversity, even though our population got very small. So it indicates, one, they

weren't tremendously genetically diverse to begin with, but also that in managing this over the years, we have done a very good job at retaining those genes.

**Hannah Bailey** [00:52:47] And I'd just like to credit, there's a couple of programs that were developed by what's called our population management center, which is part of the AZA or the American Zoo and Aquarium Association. And so we utilize those programs and it helps us choose parents to maximize that genetic diversity.

**David Todd** [00:53:17] OK, well, and you talked to us a little bit about, you know, some of the captive breeding issues, I think one that I'd be curious to hear about is, is how you managed to I guess use artificial incubation for the eggs, and then to hand-rear chicks. Is that a phase you could talk a little bit about?

**Hannah Bailey** [00:53:42] Oh, absolutely. So I will I'll try not to go off too much on a tangent. Artificial incubation is one of my passions. I helped teach, basically, an avian embryology and artificial incubation class. I've done so here in the States and in Asia with a, with a colleague of mine that worked for many years with the condor program.

**Hannah Bailey** [00:54:10] And so what I like to say about artificial incubation is, first, it's not, when we're artificially incubating something, we're not trying to replicate what's happening in the nest. We are trying to replicate the outcome. So what we're doing is we're basically trying to get a live healthy chick. Incubation is such a subtle factor. When you look at, say you work with just domestic chickens, hens are able to sense and regulate the needs of the eggs, you know, by how tight or how loose they sit on those eggs.

**Hannah Bailey** [00:54:54] When we artificially incubate, we're not able to replicate those subtle changes, but we are able to monitor the eggs through what's called candling, which is basically shining a very bright light into the egg and looking at the embryonic development. I call it the poor man's ultrasound. So we would see different developmental milestones. And, you'd know if we need to make changes to the factors, the factors of artificial incubation.

**Hannah Bailey** [00:55:30] The other thing that we do is, eggs are supposed to lose a certain amount of weight during incubation. Typically, for most, that's around fifteen, one five, percent of their weight from when they are raised to when they hatch. And that's, what that is, that's actually water weight, moisture weight evaporating from the egg as the chick develops. And so we actually calculate that every time we look at an egg and make sure we don't need to adjust the humidity parameters or anything like that.

**Hannah Bailey** [00:56:12] We worried for a long time that if we artificially incubate these eggs, will that change, you know, how the chicks react when they're adults. And we have not seen any, any changes like that. We have not seen that artificial incubation has had a long-term impact on the ability of the animals in the wild to incubate and raise their young.

**Hannah Bailey** [00:56:44] And that's true too of hand-rearing. We opted to hand-rear and to artificially incubate for a couple of different reasons. The biggest one is that we were trying to maximize production. So if we allow hens to lay an egg or lay a clutch of eggs, which is usually about 12 eggs, clutch of 12 eggs, if we take those away from her, her body will naturally reproductively recycle a lot of times and we will then get a second flush or twenty four eggs out of somebody that we would tend to get to 12 out of. So we would pull those eggs and hopes to replicate her leaving her nest and then re-clutching and relaying eggs.

**Hannah Bailey** [00:57:31] The other reason why we did all the artificial incubation is because, I don't want to say, well we are a superstitious bunch. It seems like every time we have tried to let the hens, you know, lay their own eggs, something catastrophic like a huge rainstorm or flood has happened the night that the chicks are due to hatch. And so we want to remove those threats, as much as possible.

**Hannah Bailey** [00:58:06] When it comes to hand-rearing, we opted to hand-rear for sort of the same reason, just the reduced threat. We were concerned, greatly at first, in imprinting the birds, or making them used to human beings. But we discovered that really almost all of the prairie chickens that we've raised, around four to six weeks, they really want nothing to do with us. You know, the first two weeks they'll come running up to us when, you know, they recognize the food bowl or things like that. But after that time, they really seek to not be near us or interact with us or anything like that. So we're very lucky in that the grouse is apparently fairly hard-wired to not, not become imprinted, which saved us from having to do things like, you know, wear prairie chicken suits to interact with the, with the chicks.

**Hannah Bailey** [00:59:13] And while we've released a lot of birds and we have had a report or one or two that are, you know, more interested or not afraid of humans, but, I hate to say it, there's, there's always oddities in every bunch, so, you know, you're going to have, you know, if it's one out of the thousand, that's OK. And it doesn't seem to be more than that, you know. So we've been really lucky in that, that hasn't been a huge issue.

**Hannah Bailey** [00:59:50] We have done some when it's his parent or not necessarily a parent, it's really just the hen that raises the chicks. So hen-rearing. And that's actually been OK. The biggest issue with hen-rearing is just making sure that you can provide enough fresh food at all times for the hen and the chicks, which for most facilities isn't a problem, but I know that Houston we had a problem with it, only in that our facility is not at the Zoo, it's down on the land at Johnson Space Center. So just making sure somebody can get there, you know, several times a day, make sure the checks get fresh, you know, the freshest food possible, and a lot of that.

**David Todd** [01:00:49] Let's talk about that, because I think it's maybe not widely known, but it's a really interesting story that the Houston Zoo has this partnership with NASA at the Johnson Space Center. And I was curious if you could talk about where that co-venture started and what role does the space center breeding pens have in the whole process.

**Hannah Bailey** [01:01:17] Oh, I'd be happy to. So I mentioned that our facility at the zoo was, was put together basically by zookeepers. It wasn't a bad facility at all. But the zoo is, is not huge. It's, I think, 50 acres-ish. And we're right next to the medical center. You know, the life flight path is right over the zoo. And as the zoo started to grow, we started to utilize more and more of the space. I mean, there's very little undeveloped space at the Houston Zoo now. And in, let me think, 2004ish, 2004/2005, our, our CEO at the time, was friends with the director of Johnson Space Center. And they, they were literally having lunch one day and just talking about the various aspects of, you know, what they do, and at the time our director was a gentleman, or our CEO was a gentleman named Philip Cannon. And he mentioned, yeah, we have this program, but we're just you know, we're so confined by space that we can't expand. And the director of JSC said, well, what kind of space are you looking for? And it grew from there.

**Hannah Bailey** [01:02:43] And so the zoo has what's called a Space Act agreement, where basically they have loaned, for lack of a better word, us, a couple of acres of land down at

Johnson Space Center where we were able to build breeding pens. And we have 24, 20 by 40 foot breeding pens down there at Johnson Space Center. And it's, it's great. There's native prairie, you know, right there. They have, they, they work very hard on this big open space that they have to make sure it's, you know, good prairie. They have a very large deer population down there, too.

**Hannah Bailey** [01:03:32] And it's not in the big bustling hubbub of the middle of Houston. And, you know, there is some noise down there and certainly get jets flying over from Ellington. But what I found interesting was I could be down there when a jet was flying low across and the prairie chickens do actually get used to a certain amount of that. But, since it's not the constant loudness of the, you know, of the middle of the city, they appeared much calmer.

**Hannah Bailey** [01:04:08] The other thing is, is that this more than tripled our space for how many birds we could, we could manage. So it really gave a boost to the release program in that we were able to start releasing more birds overall to the whole, the whole population. And so I just, I think it's a really fantastic partnership.

**Hannah Bailey** [01:04:35] I like to tell the story of when we first opened, we moved the birds down for the 2006 breeding season, the first breeding season we were down there. And, man, they, they did great. I mean, we got the most eggs that we had gotten in years. We had the highest fertility in years. There was a lot of really great things about that.

**Hannah Bailey** [01:05:01] But one of the things that I thought was fascinating was that spring when all of the birds were displaying, and the wonderful thing about a breeding prairie chicken and human care is that you can pretty much walk up to it and it will stand there and display at you. It's the only time the animals don't necessarily feel that they're humans. And that's because, once again, they have the raging hormones of a teenage boy, so they don't care about anything other than hormones.

**Hannah Bailey** [01:05:35] And we gave a tour to a lot of astronauts. And they were all so impressed and so amazed and so happy that we were able to have this collaboration. And I just remember one of them saying, "this is such important work and so amazing." And it was somebody who had basically been in space for, you know, three weeks a couple of months ago, and just to have them say that, was, it was, it was changing in how we felt about the program to have that acknowledgment of, you know, these astronauts telling us what we were doing was important.

**David Todd** [01:06:29] So, too interesting to hear somebody who's been to space and has seen the blue ball.

**Hannah Bailey** [01:06:36] Yes.

**David Todd** [01:06:37] And, you know, this vast kind of living thing and has recognized that, "hey, this prairie chicken program, it's important!" You know, among all that he's seen, or she's seen. That's really...

**Hannah Bailey** [01:06:51] Yeah.

**David Todd** [01:06:51] Impressive. Well, let's talk about just another aspect of this, if not jumping too far ahead. But of course, you have this other partner, too, maybe, both the Prairie

Chicken Refuge and then the Safe Harbor program landowners. And I was hoping you could tell us a little bit about the release phase. You know, once you've got these birds raised to the point where you can actually bring them out to the wild, how do you do that? And what have you learned in the course of practicing?

**Hannah Bailey [01:07:27]** Practicing was the hard part. We, when the program first started, we tried a lot of different release protocols. You know, some of them were just, you know, take the box out and open them and let them go. But we also have these specially constructed release pens that have a lot of predator deterrence around them, like there's a hot wire and a snake barrier. And we put the chickens in there for about two weeks. We've tried a lot of different time frames and we've found that two weeks seems to be kind of the sweet spot. They don't benefit by being held longer than that. They definitely, it is not beneficial for them to be held shorter than that we've discovered with some exceptions.

**Hannah Bailey [01:08:26]** We have, we have kept them in release pens for shorter periods than two weeks when there are some other factors going on, like I can't remember which hurricane it was, but there was a hurricane coming and we could not get the birds back to a zoo facility. So it was decided to go ahead and release them because, truth be told, animals know how to deal with weather much better than people do.

**Hannah Bailey [01:09:02]** So the release protocols, we take them out to these areas, whether it be the Safe Harbor lands or the Prairie Chicken reserve. We keep them in the release pens for two weeks. In the pens, they are fed the diet that they were getting at the zoos or other facilities. But a lot of times you'll start seeing them, you know, they'll start eating the grasses and forbs and flowers and all of the things that are in the pen. We joke sometimes that they're like little cattle, because after a group of prairie chickens has been in that pen, you kind of have to let it lay fallow for a little bit to grow some more things before you let, you know, put the next group in there.

**Hannah Bailey [01:09:52]** So they stay in there for about two weeks and then we open the doors. It's another one of those things that I have to explain to people, it's not like you see on the Discovery Channel, you know, it's not, you know, you don't open the pen and they all "woosh" out. They, you know, take their time, they'll wander out. They'll eat something. They'll sometimes go back in, you know, it's not as exciting as you would want it to be, but it's so neat.

**Hannah Bailey [01:10:21]** But what's also interesting is that we have, when we put new birds in the release pens, other birds that have been released recently, or even last year's, will come by. You'll often see them sitting on top of the pens. It's just like, are you are you waiting to explain what's going on? Welcome to the neighborhood or what? But, you know, you'll see them, especially because towards that part of the year, after breeding season is when wild prairie chickens, they tend to, it's not, they don't form coveys like quail do, but they do tend to move in groups together. Mostly they're just following foods. They find a good food source, there are a lot of them there.

**Hannah Bailey [01:11:09]** But, so we keep them in there for two weeks and then we release them. Right now we radio collar all of the hens. And if we have more, you know, more radio collars, we'll do a certain subset of the males. The reason why we do hens is because we want to follow them through nesting. But males, you can actually count on the booming ground, typically. So they're all individually leg-banded, so you can tell them apart. And, you know, we, they radio track them, follow them throughout the year to see what's going on.



**David Todd** [01:11:55] So, at one point, I think there were releases made to a tract near Texas City.

**Hannah Bailey** [01:12:00] Yes.

**David Todd** [01:12:00] And I think those were discontinued and I was wondering why that decision was made. Do you know?

**Hannah Bailey** [01:12:09] I do. Because, while it was a beautiful tract, it was not really an area that was, that could maintain a sustainable group, or self-sustaining group of prairie chickens. It wasn't big enough for that. One of the things that the recovery team hopes to eventually do is have basically, even if it's a patchwork, a patchwork of prairie along the coast that birds have moved to, and this one was kind of isolated, there's no way we could figure out where good places would be, that would be flyable, safely flyable for prairie chickens to make it to. I think it's only a couple thousand acres, I want to say, it's like two thousand or twenty five hundred acres. And it is being increasingly surrounded by suburbia, basically. So there's, there's just wasn't a lot of, there wasn't anywhere for the prairie chickens to go, if that makes sense. Prairie chickens can fly. They're actually very strong fliers and can, you know, move great distances. But it is harder for them. You're not going to necessarily see one flying over the city of Houston to get to the next patch of prairie.

**David Todd** [01:13:40] Yeah. This might be a good chance. We've talked a little bit about the zoo and then the Johnson Space Center and then the release sites, perhaps just to go back and take, I don't know, a more broad view of what's happened over the years. And one question was just about sort of the zoo and I've always been struck by the kind of, sort of two modes that the zoo operates in.

**David Todd** [01:14:16] On the one hand, you're displaying animals and educating the public, but on the other hand, there's a lot that happens behind the scenes. And, you know, captive breeding is such a good example. And I was wondering if there's anything you could tell us about this sort of tension or, or maybe there's synergies between those two sides to the zoo's activities.

**Hannah Bailey** [01:14:38] Yeah, I wouldn't I wouldn't call it tension, tension, necessarily. I think the hardest part, and I can only really speak only about the Houston Zoo and, you know, I'm no longer employed there, so I can't speak for them. But the hardest thing is, for us, was space. We did have a prairie chicken exhibit for a while and it was it was an OK exhibit. But one of the problems that came along with it is that during most of the year, prairie chickens aren't that exciting to the public. Because they're, you know, medium-size brown birds that hide in the grass. So it's kind of hard to, hard to make that an exciting display.

**Hannah Bailey** [01:15:35] Now, during the breeding season, they make an incredible, incredible display. But what we found, once we moved our birds from the zoo down to the Johnson Space Center, is that they needed that, they needed that stimulus of other birds being in the area for them to really display. We kept a male and female up at the zoo and then they all colored up. But he never really displayed that much. And that we really think that was because there wasn't, you know, the other birds that he could hear within, I mean, they were probably two hundred yards, you know, away from them. But he could still hear them and get that stimulus. So it's a hard, it's a hard species to display because the public, you know, wants bright and exciting things.

**Hannah Bailey** [01:16:36] However, the zoo has gone to more talking more about what we're doing behind the scenes and the storytelling that goes along with this. So the biggest problem right now for having prairie chickens on display is just space. We don't have a lot of space, and while they don't need an enormous enclosure, they do need something that, you know, gives them enough place to hide, you know, in the grasses behind the public because not everyone wants to be on display 24/7. And we just don't have that, the right, we just don't have the right space for it right now, or they don't have the right space for it right now. So like I said, I wouldn't necessarily say it was tension, I would just say more of it is about finding the right thing for the birds.

**Hannah Bailey** [01:17:35] We, we were working with getting a live webcam from our breeding facility that would be displayed during breeding season in what we call our Swap Shop, which is part of our children's zoo. And that was working really well for a while until we ran into some snags with government firewalls. It's a long story, but, you know, basically it's really hard to set up a webcam, via a government website, because they are more prone to cyber attacks, I guess. And I'm probably going to be on some list somewhere for saying that they don't want the government to be taken down because somebody hacked into the prairie chicken cam. I don't think that would be good PR for the species.

**David Todd** [01:18:36] Yes.

**Hannah Bailey** [01:18:38] But as far as I know, they're still trying to work on that. And the good thing about that is they can then, the Swap Shop in the children's zoo is an amazing place where kids can really interact with natural things and they, they learn about stuff. And it's a great place for telling the story of the prairie chicken. So I know that's one of the, that was one of the goals. And I think they'll, you know, I think so, you know, reach it. I really do. I think they'll reach that goal. And I think it will help people understand a lot more about how much we do. You know, our conservation work, while some of it is on display, so much of it is behind the scenes and not really talked about to the extent that it needs to be.

**David Todd** [01:19:33] Yeah, well, thinking about the guests, the public, that you greet to the zoo, if I recall my own childhood going to the Houston Zoo, you know, what was the big appeal was going to see the lions and tigers and elephants and camels, you know, big charismatic creatures from exotic places that had this, you know, story of adventure...

**Hannah Bailey** [01:20:04] Yes.

**David Todd** [01:20:04] And safari, you know, and I think it's striking that what you were trying to do with the Attwater prairie chickens was really about a, you know, a small bird, like you said, is, you know, kind of dusky brown and it hides in the grass. And it's not from an exotic places; it's from, you know, within 50 miles. Was, was there a kind of effort to try to make this sexy enough to appeal to the public as a way to invest in zoos, the people and resources?

**Hannah Bailey** [01:20:39] Yeah, I mean, I think so. I think you know, I think that's kind of the key. One of the things when I talk to, when I talk to, you know, I talk to school groups and, you know, civic groups and bird groups and all sorts of things, and one of the things that I, and I heard this from a speaker once, that I like to talk to people about is, yeah, I mean, you know, you can go to Africa or Antarctica or Asia or India and see all of these fabulous things. But you still need to remember that there are things just as exciting in our own backyard. I joke that I

don't know what I'll do if I live in a place without alligators because I love, you know, I love hiking around knowing that something dangerous is watching me. You know?

**Hannah Bailey** [01:21:40] But one of the things that really stuck with me was I heard a, there was a field researcher who was, she was actually talking about wolves at this lecture I went to. And she was talking to us and she said one of the things that frustrates her the most is when somebody is like bird watching and they say, oh, it's just a cardinal. And she says, we all need to remember to keep the cardinal in our, in our binoculars and look at it because of the truly amazing and wonderful thing that is right there in front of us, which is true. And so I think that's been my passion is talking to people and letting them know that, you know, let your kids go out and dig in the backyard. You'd be surprised what they find.

**David Todd** [01:22:31] Well, I guess in your own example, just that the purple martin and the tree frogs, and the toads underneath the air conditioner were all plenty fascinating.

**Hannah Bailey** [01:22:41] Yes.

**David Todd** [01:22:42] Well, here, here's another question that maybe you can field for us. I've heard some critics charge that the Attwater prairie chicken takes such heroic measures to keep it alive (I think the phrase is conservation reliant),

**Hannah Bailey** [01:22:59] Yes.

**David Todd** [01:23:01] That the resources put into the prairie chicken might be better spent on some creature that was more responsive or, you know, might be better spent elsewhere, I guess is the basic idea. How do you respond to a criticism like that?

**Hannah Bailey** [01:23:19] I usually stick my tongue out at them. I mean, there's a couple different sides to that story. When you look at the overall numbers, personally, I think prairie chickens are a conservation bargain. Maybe, maybe a million dollars a year, and I'm elevating it, is spent on prairie chicken recovery. In the grand budget of, you know, the U.S. or even the Department of the Interior, that's nothing.

**Hannah Bailey** [01:24:03] Is it reliant on us right now, to a certain extent? Yes, but we are discovering more and more things every year that make it more successful in the wild. And makes it less reliant on us doing releases.

**Hannah Bailey** [01:24:23] So what I usually talk to them, talk to these naysayers, for lack of a better word, about is that first, conservation doesn't happen overnight, and, man, it would be great if it did, but it does not. You know, I compare it to other recovery programs that people maybe have heard about more, like the whooping crane or condor, and these are all still having, you know, problems that maybe aren't talked about very much but we know they're there. And condors have a horrible problem with what's called microtrash, feeding their chicks, you know, small pieces of like bottle caps or small pieces of plastic. There's also issue with them and lead-based ammunition for hunting, where they get lead toxicity. So there's still things that they have to overcome in all of these, these programs and prairie chickens are no different.

**Hannah Bailey** [01:25:30] And when it comes to the money, they have to realize, I think the realization needs to be there, too, that this isn't just about the money we're spending is not just on the birds. It's on prairie restoration and prairie management and education and public

outreach. And all of these are such an important part of conservation, because even if it doesn't save the Attwater's, it has a greater impact on all of the species that utilize these areas. And so it's important that it's a snowball effect, basically. And that to me, that is just as important as saving the prairie chickens.

**David Todd** [01:26:14] Well, so the thought may be from your last comment is that this prairie chicken is sort of a litmus test for the, the native prairies in Texas and how important those are?

**Hannah Bailey** [01:26:27] Yeah, absolutely, I think so. And the other thing is that our, our work with the prairie chickens has already helped other grouse species. The Calgary Zoo has started a sage grouse conservation program. And when they started it, they reached out to a lot of people, including the prairie chicken recovery team, to say, what do we do? And they, so it was, they took a lot of our information and it was great for them because as one of the people I used to talk to up there had said, you know, we started off knowing, you know, without having to make a lot of these, having to learn a lot of these things that y'all already did.

**Hannah Bailey** [01:27:21] You know, they, they started off immediately with nutritional studies, so they weren't guessing about what they should feed the chicks. We helped with enclosure design, to minimize, you know, just minimize injuries and hopefully maximize breeding. And they did it. They saw a good successful start to that program. So, even if this doesn't save the Attwater's, we're hoping that this information can be utilized to help other grouse species.

**Hannah Bailey** [01:27:57] We have a lot of European counterparts that are working with capercaillie, which is a large grouse species in Europe, who have said the same thing about our, our protocols and that they feel like this has helped them get ahead of the game.

**Hannah Bailey** [01:28:15] And the other thing that we're learning, and you know, this is something that as humans, we should have learned with things like the whooping crane or the California condor, we've got to stop waiting until there's, you know, less than 50 animals to do something. We need to start admitting before then that something needs to be done, while we're still able to. In the case of the Attwater's we've done genetics to, genetic investigations, to make sure that we're not setting them up for inbreeding and things like that. Not every species is going to be that lucky. So we've got to start sooner. Or even better, we've got to change our ways so that they don't get to those, those places.

**David Todd** [01:29:08] I see. Sort of to do some earlier interventions while the birds may be in decline, but not before, not after they've collapsed.

**Hannah Bailey** [01:29:17] Exactly.

**David Todd** [01:29:18] Is that what you're thinking? Yeah. OK, well, we're getting close to totally debriefing you. I was curious if you could answer a couple more questions. One is that after over 20 years at the zoo, you have made a big jump now. I think you're going to go to graduate school to learn about managing and conserving species in trade. And I'm curious what, what led you to take on this new challenge?

**Hannah Bailey** [01:29:51] Well, so I have been very lucky in that I have been able to attend the last two CITES Conference of the Parties, which is CITES is part of the UN Environmental

Programs Office. It's the Convention and International Trade of Endangered Species. So this is obviously, you know, a worldwide treaty. And I went to the Conference of the Parties in Johannesburg in 2016 and then last year in Geneva. And it's a fascinating look into how regulations impact the conservation of a lot of different species. There's also a lot of politics involved in it that I found very fascinating when attending the Conference of the Parties.

**Hannah Bailey** [01:30:56] I learned at the C.O.P last year in Geneva about a program in Spain that is specifically a master's degree in wildlife conservation as it relates to the CITES treaty. And at first I just thought, oh, that sounds interesting. But the more I started looking into it, the more I thought this is really something that I'm passionate about. You saw, I think, on my resume that I've been curator or manager of our animal records department. I've always been fascinated with the legal and regulatory aspects of what we do and how that helps us make decisions about some of the things we do in the zoo world or in the conservation world. And this I thought was just a perfect opportunity. And to be quite blunt, for a master's program, it was really inexpensive.

**Hannah Bailey** [01:32:01] So it's a, it's a three-month intensive class work in Spain, which also doesn't hurt. It's taught in English, Spanish and French, the three languages of the UN. And it's an 11 weeks of class each week and then after that, you write a master's thesis. And I, unfortunately, I was supposed to go this past April, but COVID changed that plan, and so I'm hoping that actually it will be in 2022 will be when I attend.

**Hannah Bailey** [01:32:43] Right now I'm having what I call my "practice retirement". So I'm just kind of keeping myself busy. I'm doing the data analytics course through the University of Texas that I think will help me with some of my ideas of what I, what I hope to do after my, my graduate degree. So that's kind of how that came about.

**David Todd** [01:33:16] It was nice to take a break and see where you've been and maybe plan where you're going. Could you maybe take one last moment and tell us if there's anything you'd like to add, you know, about the prairie chicken or about bird conservation in general?

**Hannah Bailey** [01:33:37] Hmm. I mean, I could probably talk your ear off for another hour, but I mean, I guess the big thing for me is I've always been asked, why should we conserve these birds, not just the prairie chickens, not just the Attwaters, but I've gotten the question about a lot of different bird species that we work with. And one of the things that really kind of hit home for me was something a colleague said. I'm not particularly a religious person, but he gets asked this question all the time. And his answer, which I now really think about a lot, is, you know, whomever you believe, you know, made the universe, you know, do we as humans have the right to alter as much as we have? And if we can, if we can save one of the things that was here before we got here, why, shouldn't we?

**Hannah Bailey** [01:34:43] And that really, to me, is kind of how I think about things. I don't want to be the one to make the decision to, you know, give up on these animals, because once we've lost it, there's no getting it back. And I, you know, specifically with the prairie chicken, I don't want to live in a world where the Cupid of the prairie isn't dancing around every spring. You know, I just don't. So that's kind of my feelings about that.

**David Todd** [01:35:19] Well, well said. And I hope that the Cupid of the prairies is always dancing. What a great site and I hope it has a good future. Certainly brighter thanks to your efforts. So many thanks. Lovely to talk to you. And I hope that our paths cross in some way, somewhere, soon.

**Hannah Bailey** [01:35:45] Yeah, absolutely. And if you have any other questions, I'm always happy to answer them.

**David Todd** [01:35:52] Well, thank you so much. I appreciate it. Take care of yourself, Hannah.

**Hannah Bailey** [01:35:56] OK. Thank you, you too.

**David Todd** [01:35:58] All right. Bye now.

**Hannah Bailey** [01:35:59] Bye.