

**TRANSCRIPT**

**INTERVIEWEE:** Dean Keddy-Hector

**INTERVIEWER:** David Todd

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**David Todd** [00:00:01] All right. Well, good morning. I am David Todd, and I have the privilege of being with Dean Keddy-Hector.

**David Todd** [00:00:09] And with his permission, we are planning on recording this interview for research and educational work for the Conservation History Association of Texas, and for a book and a web site for Texas A&M University Press, and for an archive at the Briscoe Center for American History, which is based at the University of Texas at Austin. And he would have all rights to use the recording as he sees fit as well.

**David Todd** [00:00:37] So that is the plan that we had. I just wanted to confirm that that's all right with you.

**Dean Keddy-Hector** [00:00:44] No, that's fine.

**David Todd** [00:00:45] Great. Okay. Well, it is Tuesday, June 14th, 2022. It's about 10:07 on Morning Central Time. And again, my name is David Todd. I'm representing the Conservation History Association, Texas. I am in Austin and we are conducting a remote interview with Dean Keddy-Hector, who is also based in the Austin, Texas, area. And I should probably point out that this is the second session that we've been fortunate to have with Mr. Keddy-Hector. There was an earlier one on June 7th and which mostly concerned his early years, his education, and then some discussions about the aplomado falcon. And, today I think we are going to focus more on his work with the golden-cheeked warbler.

**David Todd** [00:01:42] But just as a little background for those who are listening, Mr. Keddy-Hector is a wildlife biologist who has worked with the Chihuahuan Desert Research Institute and Texas Parks and Wildlife in its Natural Heritage Program within the Endangered Resources Branch there. He also worked as a staff scientist at Texas Public Employees for Environmental Responsibility, and has taught biology for a number of years at the Austin Community College and Huston-Tillotson University here in Austin.

**Dean Keddy-Hector** [00:02:15] So, with that brief introduction, I just wanted to skip ahead and dive into questions about the, the golden-cheeked warbler. And I guess the first question I'd have is that I believe you worked as the staff ornithologist, zoologist, biologist at the Texas Natural Heritage Program at Texas Parks and Wildlife. And, and I thought that since that work there involved the warbler, we might want to know how you came to work there and what this program was within Parks and Wildlife.

**Dean Keddy-Hector** [00:02:58] Well, I think when I started work there, I was teaching at ACC, Austin Community College, and saw a job announcement for someone to do mostly

statistical programming for their Coastal Resources program, that at that time was nested within the Resource Protection Division. And I could write programs in the SAS, a statistical analysis system. So, I was pretty well qualified, so I got that job.

**Dean Keddy-Hector** [00:03:31] But within the first three or four months, the Natural Heritage Program advertised a position for a zoologist. And I applied for that. And shortly before, probably after I'd already applied, but before I was interviewed, the Peregrine Fund came in and did a big meeting at Parks and Wildlife about the aplomado falcon reintroduction efforts. And they had no idea I was working for the department then. And so Bob Murphy, our branch chief, sort of dragged me along as their prized surprise guest there. And, and I don't know if that benefited me in terms of getting the position at Natural Heritage, but the timing was perfect.

**Dean Keddy-Hector** [00:04:18] And then I started working for the Natural Heritage Program. I think it probably was the spring of, gosh, 1988, '89, probably '89. And my first assignment was to write up the recovery plan to golden-cheeked warbler, and which isn't really a traditional Heritage program zoologist kind of work. You know, Heritage Program zoologist assist the database manager (Dorinda Sullivan was her name) in keeping track of species occurrences and evaluating the status of species for the purposes of assembling this huge database of organisms of concern, not necessarily endangered or threatened or candidate species, but anything that might have a restricted range or you think is declining.

**Dean Keddy-Hector** [00:05:19] So the recovery plan assignment was a little different. I had done one before for the aplomado falcon, and so I, you know, I knew the, the basic format they wanted and my liaison at Fish and Wildlife Services was Carol Beardmore, who had studied golden-cheeked warblers while working on her master's degree at Texas A&M. So, I had a knowledgeable person who technically was the editor, although she and I co-wrote a bunch of the portions, or at least I'd run everything by her. And so that was the primary, my primary duty for the first probably six months or so.

**Dean Keddy-Hector** [00:05:59] And this this kind of stemmed from, well, it's tied into Section 6 funding for Fish and Wildlife Service, Section 6 of the Endangered Species Act, that awards moneys to the state wildlife agencies for endangered and threatened and candidate species research and management activities. And it's pretty common for moneys like that to be used for recovery plan preparation.

**Dean Keddy-Hector** [00:06:30] Not always by people that are experts on the species. I certainly wasn't expert on golden-cheeked warblers at the time. I was a raptor guy. And, you know, my involvement with small songbirds was as, you know, prey, you know, delectable little, little snacks, for aplomado falcons and other birds of prey. And so it was a, it was a change of pace for me.

**Dean Keddy-Hector** [00:06:57] And, but I enjoyed, you know, getting out in the field and becoming knowledgeable about this species, starting to do the literature review. I've always enjoyed the combination of intensive literature review and field work. I think you got to do both or you really don't understand what you're doing, and you're kind of doing a disservice to people that have come before you and done the hard-core job, you know, of field research coupled with publication. And most of the history associated with species like golden-cheeked warblers and aplomado falcons is very interesting to read about, you know, makes a, adds a really important dimension to what you're seeing in the field.

**Dean Keddy-Hector** [00:07:41] But, somewhere along in there, I decided to go ahead after the recovery plan was completed, started to build a color-banding study that maybe I should talk about later on.

**Dean Keddy-Hector** [00:08:01] Just to regress, the Heritage programs were originally set up by the Nature Conservancy. The idea was to temporarily support them and then have them acquired by a state agency or some other entity within the state that then could provide long-term support for them. And this program began under the auspices of the General Land Office in Texas. And it was acquired by Texas Parks and Wildlife within the Resource Protection Division.

**Dean Keddy-Hector** [00:08:38] And, you know, knowledge is power. And so once these things are established, especially because they're linked to the Endangered Species Act, the unavoidable link, these become desirable things to have or, or maybe it's desirable to not support them so well. And I think our program was pretty well supported by the department funding, though the linkage to endangered resources, I think, sometimes created problems. It certainly did for me.

**Dean Keddy-Hector** [00:09:13] And that it kind of throws the heritage program people... And I should mention them. I mentioned Dorinda Sullivan, the database manager; Andy Price was the herpetologist who's deceased now. So is Dorinda. Bill Carr and Jackie Poole were the two botanists - two excellent botanists. David Diamond was my boss, head of the program, who's a grassland ecologist. And then we worked closely with the Endangered Resources people like and Lee Ann Linam, in particular, and, and David Hernandez, who helped me out on a lot of my field studies.

**Dean Keddy-Hector** [00:09:48] So it was a nice, cohesive group. It was a lot of fun to work with these people. Everybody was hard-working and had a good sense of humor, on top of that. And I think, you know, part of that comes from being able to go out in the field, you know, do things you love out in the field.

**Dean Keddy-Hector** [00:10:05] But, but at any rate, I transitioned to functioning more and more as an endangered species biologist than as a heritage program zoologist in the classical sense. And I immediately wanted to get out in the field and do warbler studies so I could really learn more about this species.

**Dean Keddy-Hector** [00:10:22] And, in our first site, and this was at the request of individuals in the Wildlife Division at Parks and Wildlife, was to do a color-banding study out at the Kerr Wildlife Management area, where one of their technicians, Tim Schumann, was already a good songbird person, you know, a great field biologist, and we got to take advantage of that to have a little addition support there, a position that was already paid for. And then I hired a great bird bander, Vicky Hatfield, to work with Tim out in the field.

**Dean Keddy-Hector** [00:11:03] I came out, got the project started. It was really cool to ... like I'd trapped a lot of hawks before, but I'd never done this song playback capture of territorial songbirds. And I remember setting up a net the first time and I had some recordings of golden-cheeked warbler territorial vocalizations and playing, playing, and having like four males come in and buzzing around my head while I'm sitting there in the middle of the net with the speaker. And we didn't catch a single one. They all avoided the mist net.

**Dean Keddy-Hector** [00:11:39] But, pretty soon, Vicky and Tim started catching onto the banding at the Kerr. And one interesting detail as we started finding them. And it was like an old cedar break that had survived on the Kerr that the Kerr staff would take visitors out and say, "Well, this is not warbler habitat because it's got too much juniper in it, too much cedar."

**Dean Keddy-Hector** [00:12:04] Well, we had warblers in that. And pretty soon after that they suddenly had different assignments for Tim to work elsewhere on the wildlife management area, which pretty much shut down their project at that site. And I don't know if that was the real intent, or if it was a necessity because, I mean, most of the wildlife managers have limited staff. They need all the help they can get.

**Dean Keddy-Hector** [00:12:30] But at any rate, it created the incentive to move the project closer to Austin, where we could support it better. And that's why we ended up at the Balcones Canyonlands National Wildlife Refuge, at the Fish and Wildlife Service's request. And Carol Beardmore was instrumental in starting that. Deborah Holle, who I'd gone to graduate school with at Oklahoma State University, was the refuge manager, and Larry Narcisse was the assistant refuge manager. Both were very supportive of our presence there. And, you know, other than the fact that it was like an hour and a half drive from my house in Driftwood, it was a great place to work.

**David Todd** [00:13:17] No, no. I just wanted to jump in here and ask you if maybe you can lay out kind of the life history and ecological niche that that the golden-cheeked warbler filled, before we get too much further into it. That might help people get oriented and be able to follow what you're explaining better.

**Dean Keddy-Hector** [00:13:43] Well, it's a, it's a wood warbler. And most members of the general public will have no idea what that is. But, you know, sometimes they're described as the butterflies of the bird world, even though I could think lots of other groups of birds that would fill that description. They tend to be small. I think the largest would be the yellow-breasted shaft, that's maybe is the size of a cardinal. But most are like a third of an ounce. I mean, ten grams, little tiny things. Not as small as hummingbirds, at least our local hummingbirds.

**Dean Keddy-Hector** [00:14:18] And they are major insectivores. If you watch one foraging, they work their way meticulously through, especially early in their breeding season in March and April, through the oak blossoms, the "catkins" we call them, and new leaves and just catching small bug after small bug, and, you know, mostly little tiny caterpillars.

**Dean Keddy-Hector** [00:14:46] One that I kept in captivity, an injured bird, we had kept captive. Well, you could actually watch it through a peephole in the enclosure I had, you know, gleaning small larvae and small spiders from these, these oak blossoms while singing sometimes. You know, they'll pack multiple items into their bill when they're feeding young and carry them to the nest.

**Dean Keddy-Hector** [00:15:12] They, they only nest in, I would say about a 35-county area, but the estimates vary on which counties. Some say 27. I think Pulich recorded them in 31 - all central Texas, Edwards Plateau, a little north of the Edwards Plateau into Lampasas, to the Cut Plains. There was a nesting population in Dallas County. That was kind of interesting. And so that's the northern limit of their range up there. And then swing all the way down just west of IH-35 and then just north of US-90 to, what is it, Kinney County, out there - Kickapoo Canyon State Park.

**Dean Keddy-Hector** [00:16:01] Sort of forms a crescent in central Texas, all associated with the presence of Ashe juniper, in combination with various oak species - live oaks, Texas oaks, lacey oaks, post oaks sometimes, blackjack oaks sometimes - kind of the typical Hill Country vegetation. To add to that list, you know, black cherries, or escarpment cherries, and Texas ashes, and walnuts, and pecans and things like that. But preferentially in the areas that have a mixture of oak and juniper, and usually a pretty dense mixture.

**Dean Keddy-Hector** [00:16:40] They're highly migratory. They migrate through Mexico, mostly the eastern corridor of mountains - Sierra Madre Oriental - to southern Mexico and much of Central America in the high country, above a thousand meters above sea level. And where they winter in pine - oak woodlands doing kind of the same stuff - gleaning insects from the surfaces of the trees.

**Dean Keddy-Hector** [00:17:15] They head south, gosh, they drift out of here, really in July, mostly the latter part of June and July. A few hang around into August. I remember we had a had an adult male come in to recording I played back when I worked for Parks and Wildlife - I want to say mid-August, I have the date some place - up on the Webster tract of the Balcones Canyons National Wildlife Refuge. So that kind of surprised everybody.

**Dean Keddy-Hector** [00:17:44] And hard to tell when they leave because the males quit singing. And they've got this detectability bias that makes you think they're gone when they shut down and quit displaying, when really they may still be there and hard to tell that for sure, unless you spend a lot of time in the territories looking for them.

**Dean Keddy-Hector** [00:18:05] But anyway, they drift out of here in the latter half the summer to wintering sites. And I'm assuming they forage along the way. And then they come back mostly early March. A few show up in late February. But even now, with global warming going on, the typical pattern is for them to get here mostly about the second week of March, and set up territories, males displaying like crazy. Not sure when the females arrive. My guess is they arrive pretty soon after the males arrive. But they're not as detectable because they don't sing.

**Dean Keddy-Hector** [00:18:44] And they form pair bonds and then the females rapidly build nests. In just a few days they build nests. Actually, here's a nest [showing a nest] if you want to see a nest. This was in a hackberry tree on the Victoria tract at Balcones Canyonlands National Wildlife Refuge. The nest is, it's not unique in being constructed of cedar bark, really thin strips of juniper. There's lots of other birds that build stick nests in this area that use juniper bark. I mean, it's just a natural nesting material.

**Dean Keddy-Hector** [00:19:26] But it seems pretty clear the golden-cheeks are obligate in their use of juniper, like they've got to have it to build these nests. I remember when I was at Parks and Wildlife, there were rumors in the popular literature of people finding nests, you know, built from just grass. And those were never confirmed.

**Dean Keddy-Hector** [00:19:46] It's got real thin grasses, however, on the lining of the nest. And you may find snake skins and stuff like that incorporated into the inner lining. So, it's always neat to me that birds will manufacture these wonderful little structures and vary the composition as you go from the outside to the inside, you know, so using the bigger, coarser stuff on the outside that's woven together, and then finer stuff on the inside where the eggs will be laid.

**Dean Keddy-Hector** [00:20:19] And, you know, that was one detail. We picked up the knack for finding nests and that's been really good. Gosh, the people that work with them since then, are just fantastic at finding nests - much better than we were.

**Dean Keddy-Hector** [00:20:35] Go ahead.

**David Todd** [00:20:36] No, I was I was curious - this knack for finding nests - I mean, what were some of the clues or hints that might suggest that there would be a nest secreted in some dense motte. That seems hard.

**Dean Keddy-Hector** [00:20:56] Yes, it is. But it's a lot of fun. It's great sport. And it's no different for, say, finding a Cooper's hawk nest or a red-tailed hawk nest. You know, you look for a bird carrying nesting material. You figure out the orientation of its flight and you try to get a couple of sightings like that and you triangulate on an area. Then you sit in that area and you triangulate these flight bearings. It's not going to give you the precise location. So, you have to spend some time where your triangulation suggests the nest should be, and hopefully you'll see the bird come on in.

**Dean Keddy-Hector** [00:21:39] You kind of narrow it down that way, and I think everybody's got kind of different tricks for doing it. But a lot of it just being out there long enough, and keeping your eyes peeled. Sometimes the females make a little chip sound when they're in flight. Then they may repeat it and you can kind of hear that chip sound move, move in a certain orientation.

**Dean Keddy-Hector** [00:22:04] But you've got like a four- or five-day window of opportunity to locate that nest while it's being constructed. After that, you look for foraging flights, you work with birds, making, I call them, "beeline flights" and do the same thing, try to triangulate using the orientation of those flights.

**Dean Keddy-Hector** [00:22:24] And even so, the nests are so cryptic, you know, if it's in a juniper, it's going to look just like the outer trunk of the juniper. So, you've got to be pretty sharp to pick that up. Hopefully what you'll see eventually is the female or male bringing food right into nestlings or a female bringing nesting material right to the spot.

**Dean Keddy-Hector** [00:22:46] You know, I was thinking: that's really the way I found the hummingbird nests, is like to see a hummingbird go right to the nest while I'm standing there. So, there's a bit of luck involved in that last step. But anyway, it's fun.

**David Todd** [00:23:00] It sounds like an Easter egg hunt.

**Dean Keddy-Hector** [00:23:04] It is. And if you've got two or three people collaborating, then, you know, you're talking to each other and kind of saying, "Well, there, there she goes." And it's even more fun.

**David Todd** [00:23:15] And the female will build a new nest each season? Or does she re-use nests from prior seasons and maybe refurbish them?

**Dean Keddy-Hector** [00:23:26] No, they build a new nest every season. And then if something happens to the first nest within a season, they'll rebuild pretty quickly. So, if the, like we had a bad hailstorm hit one of the study sites out at the National Wildlife Refuge and

lost a bunch of the nest. But females rebuilt. You know, they can rebuild within days. Same thing: if they lose a brood of young to a predator, they'll rebuild, attempt to nest.

**Dean Keddy-Hector** [00:23:58] And I've forgotten I was looking through some of the more recent stuff about how many second, third, fourth attempts females had made. I know with other wood warblers, like yellow warblers and prairie warblers, that I remember could re-nest like four or five or six times during the season. Some can even produce like second broods. I'm not sure about third broods in the case of golden-cheeks. We had some evidence of that at our study site.

**Dean Keddy-Hector** [00:24:26] Yeah, they're, I want to say most (as a biologist you learn to be careful about saying "most" or "all", especially a field biologist), but, you know, most of our familiar songbirds don't re-use their, the nest they build in a subsequent season or even within the same season, which is impressive, when you think how much energy they're putting into constructing things like that. I mean, the nest is going to outweigh the female that builds it several times.

**Dean Keddy-Hector** [00:24:59] So, and did these females have fidelity to a given motte or tract, or do they maybe find a new area every season?

**Dean Keddy-Hector** [00:25:14] That's a good question. And I'm frankly, I'm ignorant about rates of fidelity, females to a specific territory or a specific male. And I know in raptors you'll have like a certain rate of divorce, especially after unsuccessful nesting attempts. I assume the same thing goes on with golden-cheeks and I bet someone's looked at that, but I just don't, I'm just not aware of what they found, their findings were. I mean, the males showed very strong fidelity to specific territories, especially once they're in their second breeding season. And most times you can find them back on the same territory that they were occupying the previous season. Not always, but most times.

**David Todd** [00:26:06] Okay. Well, you've given us a nice introduction to the life history and the niche that this bird fills from, you know, how they feed and migrate and pair up and build nests. And I was wondering if you could just take us to kind of the next step about how these birds came to be rare and suffered declines. What do you think some of the factors were?

**Dean Keddy-Hector** [00:26:39] Well, we have to be careful about, just like with aplomado falcons, we have to be careful about what our baseline is, and then get into controversy immediately about that and also into the well, controversy about the baseline, what the so-called "original conditions" were (it's kind of a silly term, but...), and then the controversy about current population estimates.

**Dean Keddy-Hector** [00:27:04] But we, there had been such an intensive campaign to clear brush in central Texas, that our assumption is that habitat for the species has declined in availability at least since the 1940s. But to my knowledge, no one's actually gone through and done a range-wide look at using available imagery of the extent to which that occurred. You know, then we have to extrapolate to assume that if, you know, golden-cheeks nest in juniper woodlands and most of those, you know, a lot of that, has been cleared since the 1940s, that they've also declined.

**Dean Keddy-Hector** [00:27:51] And you know, the big issue with this species really is it's an endemic species that occupies a limited distribution within Texas, coupled with the obvious evidence that there has been drastic reduction in the amount of oak- juniper woodlands, at

least in the 20th century. You go beyond that to the 19th century, then you get bogged down into controversies about what the conditions were like back then, I know.

**Dean Keddy-Hector** [00:28:27] And I've always kind of quipped that it's kind of a Biblical approach to things to talk about original conditions because, you know, you have to get into, "Well, what do you mean by original?" You know, our planet is ever-changing. Ecology is so dynamic. Plant communities aren't static. And you know you have to be very careful how you phrase that.

**Dean Keddy-Hector** [00:28:54] In a way it shouldn't matter, if you've got an endemic songbird that's occupying habitat that's been targeted for removal. In a way, it doesn't matter what the conditions were like in the 19th century or 18th century or so on. At least to me; it does to a lot of people.

**David Todd** [00:29:14] Well, and so you're saying that some of these Ashe juniper-oak woodlands were pretty drastically cleared, I guess, starting in the 1940s, and I'd be curious why they were being cleared. What were some of the big uses that that conflicted with the woodlands?

**Dean Keddy-Hector** [00:29:38] Well, clearing, large-scale clearing in central Texas, just like elsewhere in United States, was done mostly to open up land for grazing purposes and you know, secondarily for farming, at least if you go back farther. And, I think more recently, since, I guess, the latter part of the 20th century, the reason has been to reduce the extent to which specific tree species like Ashe juniper use up water in the soil. And that gets into another complicated bag of worms about whether they do or they don't and how much they use. But those are the two primary justifications.

**Dean Keddy-Hector** [00:30:30] And then another one would be removal of trees in areas where, that you're developing for human habitation, you know, real estate developments. And then you get into highway rights-of-way and utility corridors and things like that.

**Dean Keddy-Hector** [00:30:51] But the big deal and the reason for federal subsidies for brush clearing was ranching. And, you know, that kind of gets into, back into this controversy about what was here in the 19th century. And, I think we had a much more forestry-oriented economy in the mid to late 19th century that's been kind of supplanted by ranching. Both were present in the mid and early 19th century. I mean, there were, there were sawmills all along the Balcones escarpment region.

**Dean Keddy-Hector** [00:31:32] And I think humans are inclined sometimes to go to extremes. You know, it's, say, well, this was all savanna grassland or this was mostly woodland. When there again, ecology doesn't work that way. It was a mixture, an interesting, ever-changing mixture of the two with lots of intermediate kinds of plant associations.

**Dean Keddy-Hector** [00:31:56] But I think I strayed away from your question.

**David Todd** [00:31:57] No, no, that that helps a lot. So, I think you mentioned, you know, the clearing for grazing and farming and then for maybe reducing the effect of maybe water use by the junipers, and real estate development.



**David Todd** [00:32:12] So you mentioned one thing that I, I thought was really interesting is the fact that federal subsidies might have played in underwriting the clearing for ranching. Can you tell us much more about that?

**Dean Keddy-Hector** [00:32:31] Well, it kind of coincides with the federal agencies back in the early part of the 20th century justifying their own existence for things like predator control and brush control. And kind of, if you look through the literature that's sort of when this juniper as a water-sucking weed characterization that first appeared.

**Dean Keddy-Hector** [00:33:04] And I don't know how many millions of dollars were given to landowners for brush-clearing, but a lot of money was. Actually, back when I was at Parks and Wildlife, my wife and I visited Kickapoo Caverns State Park, when Dave Stewart, who's unfortunately deceased now, was there. And we read through a transcript of an interview that he had done with the former landowner of Kickapoo Caverns, who I think was the county judge.

**Dean Keddy-Hector** [00:33:33] And he was talking about how the standard scam was to accept government money, do minimal clearing and pocket the rest. And he was unabashed about that. And, you know, they were just throwing money at brush-clearing and some landowners would take advantage of it. I doubt if all, all were, but it'd be interesting, an interesting bit of history for someone to look into - the extent to which that corruption was pervasive.

**Dean Keddy-Hector** [00:34:04] But you got a sense that all landowners are receiving money from the government to do this. So really promoting the removal of brush, even in an area where landowners could make money harvesting cedar posts from their property, which to me, you know, kind of means you'd naturally want to go to more of a sustainable harvest approach there. And I think some ranchers in the western part of the Plateau have actually done that over the years. You know, do like selective harvesting of posts, and sell those off for a little money. And which kind of is a throwback to the Civil War days where they were harvesting the bigger cedar for railroad ties and fence posts and things like that and making a ton of money off of it.

**Dean Keddy-Hector** [00:34:50] There again, you know, we've kind of drifted away from viewing this resource as a forestry resource that should be harvested sustainably, to one that's viewed as a pest species that should just be cleared.

**David Todd** [00:35:05] You know, I think you pinned this down as starting in the 1940s. And I wonder if some of the large-scale clearing might have been tied to the sort of technological things: that there was the availability of early bulldozers that could do that sort of work rather than just, you know, tree-by-tree, you know, cedar-chopping.

**Dean Keddy-Hector** [00:35:32] Yeah. Oh, definitely. Gosh, to chain acreages, you know, where you've got a big heavy chain and a ball being dragged between two bulldozers, and you just take out everything, and then root-plowing. And then I forgot what they call, oh, "hydro-axe", just come up and just chop a big tree down. All these examples of heavy machinery that make that pretty efficient.

**Dean Keddy-Hector** [00:35:57] I actually got hold of historical, I guess, 1950-vintage, some early aerial photography of one of our study sites at the National Wildlife Refuge, the Webster tract. And they had, they had gone in and they just removed all trees from the slopes of the

three east-facing canyons on the Webster tract. And when we were out there in the early '90s, some of those slopes still hadn't reforested. There must have been so much soil loss. But they could get in there with their heavy equipment and eliminate everything except for thin strips of vegetation along streams, along the canyon bottoms. And pretty amazing to see that effect, long-term effect, of kind of indiscriminate brush clearing.

**Dean Keddy-Hector** [00:36:51] You know, I would say, I'd hope people are a little bit more conscientious when they do brush-clearing nowadays, but I imagine there are example just as bad if you look for them. But I just got the impression that they were trying to clear everything they could. And this was at the time when it would have been a working cattle ranch. And I don't know how they set up their contracts, you know, which businesses actually did the clearing. There'd be another interesting figure, though, for historical purposes.

**David Todd** [00:37:24] Yeah. You know, it seems clear that the, these lands, being cleared for removing the oaks and junipers and the pecans and walnuts, and all the other trees that might have interfered with grazing. I can I can see that. But I think you also mentioned that there was this interest in removing Ashe junipers in particular, because they were seen as sort of parasitic on the water resources of the Hill Country. And I've heard, in more recent years, that there's doubts about how accurate those beliefs about water use are, and I'm curious if you can tell us anything about how they came about and, you know, worry about the tree's water use.

**Dean Keddy-Hector** [00:38:18] Yeah. Gosh, Elizabeth McGreevey's recent book about Ashe juniper - "Wanted" Mountain Cedars, Dead or Alive" - has a nice summary of that development of that thinking and its erosion as people started to look into it in more detail. But no, the basic argument is that conifers use up more water than deciduous trees because they don't go dormant in the winter. Plus, in the case of this species, it obviously likes it here a whole bunch. And so, it could become very abundant in the area.

**Dean Keddy-Hector** [00:38:56] And it always struck me that, well, you know, your forests, I mean, your soil formation, a lot of that's depended upon organic matter in the form of leaves from trees. And you can see that with these junipers and live oaks in the Hill Country pretty easily. At the same time, in general, the general principle, if you deforest or thin trees, your erosion rates go up, so you increase runoff. So, you're already talking about a much more complex situation than you have if you just treat a given Ashe juniper tree in terms of how much water it needs to survive.

**Dean Keddy-Hector** [00:39:40] And so, I remember one study I read where they're talking about how the infiltration rates are great in an area where they had removed juniper, neglecting to mention that most of that soil there had actually been created by those juniper trees.

**Dean Keddy-Hector** [00:39:57] And, you know, there again, we get into the complexity of the ecology. If you deforest an area, runoff rates will increase, which means erosion rates will increase. Infiltration usually drops some. Bray, who was a forestry professor actually at UT Austin back at the turn of the previous century, wrote about this and got some classic quotes from his articles he published about the effects of removing canopy cover.

**Dean Keddy-Hector** [00:40:40] You know, I always took it to the extreme, say, well, you know, if you want to increase runoff for your stock pond, well just clear it all and pave it. But that's an unrealistic extreme, obviously. That's just me quipping.

**Dean Keddy-Hector** [00:40:58] But yeah, you got to be careful. There are other factors that are involved, and I think they started to identify that complexity and those shortcomings of this, you know, simplistic idea that your landscape is better if you remove junipers, in terms of water recharged to the aquifers and water available for livestock.

**Dean Keddy-Hector** [00:41:24] The more forest you have, the better your water quality. You've got this super filtration system in place, even if it reduces, to some extent, the water reaching the ground.

**Dean Keddy-Hector** [00:41:34] I also pointed out way back that, you know, forests in general generate a certain amount of local rainfall and that they elevate local humidities. Probably it's a negligible effect here, but, you know, in the rainforest, tropical rainforest or temperate rain forest, it's probably very important. And I don't think anyone's actually looked at that in central Texas.

**Dean Keddy-Hector** [00:42:03] But, yeah, anytime someone comes up with a simplistic notion about the untamed world, you should be skeptical if you're a good scientist.

**David Todd** [00:42:18] That's helpful. Thanks for taking the time to talk about that sort of second look that you need to take.

**David Todd** [00:42:26] So I think we've talked about, you know, people's activities on the bird and its habitat, whether it was lumbering, clearing, grazing, you know, development for housing and utilities and roads.

**David Todd** [00:42:44] What do you think about, I guess, rivalries or competition with our four-legged and feathered creatures? I mean, I've heard some people say that that over-browsing by deer might have been a problem or attacks by feral cats or, you know, parasitism by brown-headed cowbirds, as all maybe having an impact on the golden-cheeked warbler. Do you put any credence to those concerns?

**Dean Keddy-Hector** [00:43:18] Well, cowbird parasitism is certainly a factor in some habitat configurations, especially fragmented habitat adjoining areas that have a lot of cows. It's probably going to be pretty, pretty influential in terms of the reproductive health of the warbler population, the populations of all the songbirds that nest, say, in a given woodlot.

**Dean Keddy-Hector** [00:43:54] Predation, gosh, you know, the standard culprits. It was no surprise when they started putting wildlife cameras on golden-cheeked nests, that Texas rat snakes were an important predator. I was surprised to find that Cooper's hawks sometimes find nests and take them out. Seems like such a tiny bird for Cooper's hawks to eat. Normally they go after dove-sized birds. Actually, one of the nests we found out at the, Cooper's hawk nest, we found out the Balcones Canyonlands National Wildlife Refuge, they were eating, it looked like they were eating mostly scrub jays and mourning doves. Of course, scrub jays are well-known predators of golden-cheeked warblers.

**Dean Keddy-Hector** [00:44:43] So there again, it's complex. Scrub jays and blue jays probably take out nests. We had one nest under observation that was, it was, it had a cowbird chick in it that was overwhelming the single golden-cheeked nestling that was in there. But pretty quickly a scrub jay located the nest and ate both the nestlings, the cowbird and the golden-cheeked. I've always wondered if the presence of a vociferous cowbird nestling makes

the songbird nest more likely to be predated by things like smart predators, like jays, you know, that just have more activity up there that they can spot.

**Dean Keddy-Hector** [00:45:28] But domestic animals like cats, I'm sure they're a factor. I mean, some of our broods would fledge on the ground. Loose dogs are probably a factor, probably to a minimal extent. But, you know, you're talking about an additive effect here - you know, every little potential predator, you know. Each one may not have a significant effect, but you group them all together and then it's a different story. And you know, especially in urban area, urban areas where you have like a high-density subdivision nearby, people are letting their cats, their dogs free-range. Let's see.

**David Todd** [00:46:17] And what about the deer? Do you think that that with this sort of explosion of deer in the Hill Country, do you think that that over-browsing is any problem for the golden-cheekeds?

**Dean Keddy-Hector** [00:46:30] I think it has an effect, not as great as... I mean, when I started, people thought that, "Well, they don't use junipers for foraging, they just use them for nesting material." And so, they forage mostly the oaks. If that's true, then over-browsing by deer is certainly going to have a long-term detrimental effect.

**Dean Keddy-Hector** [00:46:53] But it turns out, especially late in the breeding season, and especially the female warblers, forage a lot in juniper. There's a little moth that hatches out that uses juniper as a host species. That's most of my late season focal animal observations. We call them observations of foraging females who are moving through juniper, sometimes only four or five feet off the ground, you know, scrubby junipers.

**Dean Keddy-Hector** [00:47:20] And, you know, from that standpoint, well over-browsing might not be as influential, but still it's something to be concerned about. And I think, you know, a point I didn't make last time that's relevant here is that endangered species management is more beneficial at a community level, if you're doing things that benefit other species more than the one endangered species you work with. That was kind of one of my concerns about captive breeding / reintroduction versus more community-level management activities. But control of browsing pressure for warblers is probably going to benefit the other woodland insects feeding songbirds - white-eyed vireos, red-eyed vireos, bushtits, I'm sorry, gnatcatchers and gosh, I'm trying to think of all the ones you might see together - chickadees, titmice, stuff like that.

**Dean Keddy-Hector** [00:48:26] And, you know, we had a bad fire at our house that almost got both the houses here. And I put exclosures around some of the root-sprouting oaks. And there was a browsing effect. And we have lots of white-tailed deer out here where we live, but it was the hackberries they were eating, mostly. And so we actually have a hackberry browse line, but the root-sprouting live oaks just overwhelmed the browsing pressure. Now, you can't see any difference between my exclosures and the root sprouts at the deer could did get to.

**Dean Keddy-Hector** [00:49:10] But I remember David Riskind, who was a big influence on me at Parks and Wildlife, did a much larger browsing exclosure at I think it was at Lost Maples State Natural Area, State Park. And you could see a huge difference between the hardwood recruitment within the exclosure. I think he just took some field fence and wrapped it around some trees and created like a 40 or 50 square foot exclosure.

**Dean Keddy-Hector** [00:49:38] And so you can see there's that effect of deer. And Norma Fowler had a graduate student at the Refuge where we work at the Webster tract that was doing something similar with Texas oak recruitment. But I have the feeling after a big disturbance of like a hot fire that goes through woodland, the root-sprouting of the oaks, which they're prone to do, and the germination of all the hardwoods, just overwhelms browsing pressure, unless you have a huge population of deer in the area.

**Dean Keddy-Hector** [00:50:10] The most influential factor may be drought when it comes to mortality of seedling oaks and cherries and things like that. And that's certainly a factor we're contending with now, you know, this year, you know, and other recent years. And actually that affects Ashe juniper too. I mean, gosh, I'm guessing maybe 20, 30% of the junipers on our 15 acres were killed in the drought that was, what, ten years ago or so? And if you drive out to Sonora and Ozona, that area, you see just whole hillsides of Ashe juniper that died, I think, during the same period.

**Dean Keddy-Hector** [00:50:47] But, yeah, over-browsing is just one factor. There've been some studies done of the influence of oak wilt on warbler habitat. One fortunate thing in warbler habitat is that usually don't have the dense stands of live oaks and other oaks because they're separated from each other by Ashe juniper. And the one study I'm familiar with, you know, made a statement that perhaps presence of Ashe juniper is beneficial in reducing the spread of oak wilt among oak populations, which is kind of a neat, neat perspective to have.

**David Todd** [00:51:31] Well, this is really, really interesting to sort of go through all these different dynamic, complex sort of effects on the golden-cheeked warbler and on its habitat.

**David Todd** [00:51:45] You know, it might be helpful to just understand how you were monitoring the warblers so that you could see, you know, whether these were harmful or beneficial. I think you mentioned earlier that you'd started this color-banding study. And I was curious if you could talk about how that was done and what you found.

**Dean Keddy-Hector** [00:52:12] Well, I mentioned early on, you know, beginning a study at the Kerr Wildlife Management area and that that got us warmed up to do a more extensive study at the Balcones Canyons National Wildlife Refuge using like a ten meter, a sort of mini mist nets, with the mesh just big enough that a warbler could get its head through, but nothing else. Maybe a little smaller than that. And I've forgotten the dimensions of the mesh. And attached to a couple of net poles that you could take down. So, they're like three sections per pole and so you kind of bundle up the net, and take down the net and the polls there. And so, you could put it in a backpack.

**Dean Keddy-Hector** [00:53:00] And then have a cassette recorder and a single speaker and then a cassette tape that had the two main song types, golden-cheeked warbler song types: the "A" song that they used mostly for displaying on the periphery of territories. And the "B" song that's more of a high-intensity song that really gets the males going when you play it at a banding site. And so, I or people I had working for me who band the warblers would wander around kind of systematically hitting potential areas, set up, if they didn't hear a warbler, they'd set up and play the tape and try to bring one in, or find one singing and set up nearby and then quickly process the bird.

**Dean Keddy-Hector** [00:54:02] Usually you're right there. So, they go in the net. You see which side they fly in from. That's an important clue to allowing you to get it out of the net quickly and put a series of, well, a Fish and Wildlife Service aluminum band with a number on

it, and then three color bands, part of a code that John Cornelius at Fort Hood set up for their much larger banding project.

**Dean Keddy-Hector** [00:54:32] And then you released the bird. We didn't do any additional like weighing the birds or any kind of measurements. We just released them because we just wanted to be able to recognize individuals.

**Dean Keddy-Hector** [00:54:45] And so through the banding season, the crew would, especially the first season, put a lot of energy into banding every territorial male warbler we could find on our study sites and probably came pretty close, especially in subsequent years. You know, you get 30 or 40 maybe percent of the birds returning from a previous year. So, it cuts down the number of birds you have to trap to band. So, it's easier to saturate the population with banded birds.

**Dean Keddy-Hector** [00:55:19] And once they're banded then we could do follow-up work, observing the movements of individuals and determining whether they're paired to a female or not. Trying to find the nest in the territory. And then you kind of need at least four or five people to do that effectively for like, say, a given, I don't know, section of land, 640 acres, where you might have 50, 60 or more territories. And then I'd try to do a follow-up. Well, I had a data form that the banding crew would use, where they would characterize the vegetation at each banding site. And then separately, I'd try to go in and do like more detailed measurements of vegetation in the vicinity of the nest.

**Dean Keddy-Hector** [00:56:14] And then I spent a lot of time doing the focal animal observations of foraging males and females, and trying to find the fledgling groups of young so we could determine productivity of territories. And so that was basically it.

**Dean Keddy-Hector** [00:56:34] Also, like I mentioned before, I tried to look at the history of the vegetation at the site using aerial photography and characterizing plant species, tree species, composition of the sites.

**Dean Keddy-Hector** [00:56:50] And at the same time, we were recording observations of other species that were present: scrub jay observations, and black and white warbler observations, summer tanagers, and just every bird that we encountered there, we'd write it down, so we'd have more of a community-level feel for what was inhabiting those sites, and then the incidental observations like there were two or three sites at the Refuge.

**Dean Keddy-Hector** [00:57:18] And then later on when I started working at the Barton Creek Habitat Preserve where neighboring residents would use the sites as golf driving ranges. So, we'd be walking around in warbler territory. One in particular I can remember I picked up about 60 golf balls there. So, you get a, you get a feel for weird types of human disturbance that might be influencing the warblers, although hard to suggest how, you know, a golf ball by itself is going to be detrimental to golden-cheeks. But then you think about it, "Well, this person's using this a lot and presumably coming in and recovering the golf balls from time to time." And think, "Well, you know, probably, probably don't want the person to be doing this stuff on a National Wildlife Refuge. It, at a minimum, is littering."

**Dean Keddy-Hector** [00:58:11] And then, you know, observations of cats and dogs. Like I had an encounter with someone's Great Dane that was roaming around loose on the Barton Creek Habitat Reserve.

**Dean Keddy-Hector** [00:58:20] We would see cats from time to time, not very often, but just other stuff like that. So, in a way, trying to just capture all the information we could about the site, about the warblers.

**Dean Keddy-Hector** [00:58:32] I think the neatest thing about it all is kind of like the beginning of the spring of the next year seeing males we banded the year before coming back. I think when I finally called it quits, we had one male that had to have been at least seven years old come back, which I think they've recorded one older that now, eight, maybe ten, trying to remember. But kind of amazing to have a little bird like that live seven or eight years. And you know, you become kind of familiar with them and their color bands. The colors are worn and you get this sense of great, great age in a little bitty songbird.

**David Todd** [00:59:14] You know, it seems valuable just in itself to see this sort of snapshot of what's going on in a particular season, in a particular section of land or even a motte.

**David Todd** [00:59:27] But I was wondering if you could talk a little bit about how these monitoring efforts play into understanding the arc, the trend of the population, you know, whether its numbers are increasing or decreasing, or whether its range is spreading or contracting. I know in the last five or six years, there's been a controversy about whether some of these counts, recently made, are accurate and, you know, whether the models are accurate. And I was hoping you could help us understand that whole debate.

**Dean Keddy-Hector** [01:00:00] Well, I don't completely understand it. And I don't want to, I don't want to guess at, you know, motivations and things like that. But one thing I'll say is it's distracted from the big issue, which is habitat loss. And, just the one study done out of Parks and Wildlife that suggests that there's been a 50% well, actually 60%, loss of better habitat categories since 1986. And actually, the study was ended in 2016. So, and this was focused on like the nine-county region that sort of extends from Williamson, Travis, Hayes, down to Bexar County, I think just barely. So, it's kind of the heart of the distribution.

**Dean Keddy-Hector** [01:00:55] And, you know, it gets back to the need for monitoring habitat loss more than trying to come up with estimates of population size.

**Dean Keddy-Hector** [01:01:08] The, unfortunately, the initial estimates were very low. Pulich's estimates were very low, but were based on Soil Conservation Service ballpark estimates of the amount of juniper in an area. Then he extrapolated using kind of ballpark densities of birds and different qualities of habitat, and came up with a pretty low number. And I'm trying to remember - below 10,000 or so.

**Dean Keddy-Hector** [01:01:43] And then the status report done by Rex Wahl in 1990 didn't have adequate funding to pull together like a batch of current satellite imagery, so used imagery of different vintages and came up with another fairly low estimate.

**Dean Keddy-Hector** [01:02:00] So you have those become kind of default baselines, even though neither of those studies was comprehensive enough to serve as a valid baseline. And so as the years have progressed, every study has used different methodologies, has become more comprehensive in terms of the imagery they've used.

**Dean Keddy-Hector** [01:02:17] So you can't, you can't compare the more recent estimates with what was done in 1990 or by Pulich in 1976. But yet the general public and maybe some people that should know better than, you know, see that contrast and then make the

unreasonable claim that there's been a huge increase in population size, which, you know, is illogical in terms of evidence that there's been a huge decrease in habitat availability.

**Dean Keddy-Hector** [01:02:49] And, I mean, really, that's the, I mean this kind of gets into the City of Austin versus Texas A&M controversy. The two most recent estimates, and the most recent one that was just published a couple of months ago by Mueller's group, which is (he's a Fish and Wildlife Service employee), did the same thing that a study by Matheson et al, at Texas A&M did.

**Dean Keddy-Hector** [01:03:29] The most recent one comes up with a population size estimated to be like in the 400,000-bird range. So we're talking about three, three orders of magnitude increase in those estimates, if you compare that to Pulich's population estimate.

**Dean Keddy-Hector** [01:03:51] But then the City of Austin people have gone through and reanalyzed their data, and the data of the previous study, to point out that those studies generate huge errors when you're estimating abundance of birds in low-density areas, sometimes as great as almost 30 times larger than known population densities in areas in the City of Austin preserve system where you have color-banded birds.

**Dean Keddy-Hector** [01:04:20] And so it's a little deceptive: you look at the articles because they'll give you confidence limits, but they don't acknowledge the fact that the survey method they use is inherently inclined to overestimate abundance in low density areas.

**Dean Keddy-Hector** [01:04:36] And so there again, you got to, you got to be careful as a good scientist. You kind of factor that in. And it'd be nice to have someone come along and reanalyze their data and put in those, make a correction for those errors and just see what estimate you come up with.

**Dean Keddy-Hector** [01:04:53] But that still doesn't allow you to compare what's the status of the species, say, when Pulich studied them in 1976. You know, you could go back and use that same methodology with older Landsat imagery, satellite imagery, and maybe have some basis.

**Dean Keddy-Hector** [01:05:19] But the focus really needs to be on habitat destruction, not on population size. I mean, like the standard counter argument when someone would say, "Well, we've got plenty of warblers," is "Well, we thought we had plenty of plenty of passenger pigeons or Carolina parakeets or bison. You know, simple numeric abundance doesn't protect a species, especially if it has a limited distribution, from extinction, you know, especially if it's being targeted by, you know, human development interests. We should have learned our lesson, you know, back in the early part of the 20th century.

**Dean Keddy-Hector** [01:05:56] But, you know, it's hard to avoid political influences. It's impossible to avoid it. You've got development, I mean, lucrative development opportunities, especially in these heavily populated areas in the outskirts of Austin and San Antonio. And you've got the ranching industry.

**Dean Keddy-Hector** [01:06:20] And it's an inconvenience to have to worry about the presence of a woodland songbird, or a songbird that happens to be in woodlands, if the presence of the woodlands is incompatible with your source of income. So...



**David Todd** [01:06:41] Well, and I guess this recent debate, controversy, over the golden-cheeked warbler's current population counts and ranges and how they compare with earlier ones seems like a reprise of what happened in the '90s when there was this, you know, big pushback, some people might say blowback, against the Natural Heritage Program and the effort to try to understand and protect the golden-cheeked warbler. And, I was wondering if you could talk a little bit about, you know, what happened in those days.

**Dean Keddy-Hector** [01:07:24] Well, the, gosh, I'm just thinking, the Take Back Texas, this property rights group, Take Back Texas, that Governor Bush was involved in, and the Trans-Pecos Heritage Association were two groups that were, they were definitely upset about the infringement of the Endangered Species Act on their rights as land owners.

**Dean Keddy-Hector** [01:07:53] And beyond that, gosh, the Trans-Pecos Heritage Program, they would submit open records requests, literally asking for every species occurrence record for West Texas. And we always wondered if the interest there was to see if they could catch some of our biologists who had trespassed on their property.

**Dean Keddy-Hector** [01:08:12] I don't know if that's true or not, but at any rate, it was, we viewed it as a kind of harassment, even though the Heritage Program is a public database and you get an open records request or a FOIA, you know, you've got to respond. I mean, nowadays they'd perhaps have it where you could just download the information. But back in those days like Dorinda Sullivan would have to create the, a package that she would send out to people. But there was a lot of interest there.

**Dean Keddy-Hector** [01:08:44] And then, but to have us doing endangered species work, I guess especially me, because I worked with golden-cheeks, made us kind of a target. And we had another Endangered Resources employee, David Bowles and Andy Price, our herpetologist, were involved in the salamander goings-on. Andy was heavily involved in Houston toad work in Bastrop. And you know, at the time when they were trying to, and eventually did, enlarge the golf course there, and there were almost riots at some of the public meetings they had at Bastrop over clearing of what they viewed as Houston toad habitat.

**Dean Keddy-Hector** [01:09:32] And gosh, I went to one public meeting in Dripping Springs about golden-cheeked warbler stuff. And it struck me there were, there were elderly people there that were really concerned about what they could and could not do on their property. And had some intoxicated people in the back that were there just to harass the panel. And I was sitting there with Lee Ann Linam, one of my co-workers. We were just kind of quietly watching the whole thing.

**Dean Keddy-Hector** [01:10:03] There was a politician on the panel and, I'm sorry, she was a visitor, and grabbed the mic and then proceeded to monopolize the, you know, half the meeting. And it was just bizarre. I mean, the intent of holding meetings like that was to educate the public and, you know, and it just became chaos.

**Dean Keddy-Hector** [01:10:28] It was so much better: I think one time I gave a talk to an Audubon group up in Marble Falls and mostly older people, and they just wanted to know about golden-cheeks. So I could just do a nice natural history presentation in my role as a teacher, which is unfortunately the way I'd hoped that I could do more of that at Parks and Wildlife, but the biopolitics kind of get in the way of being able to teach people, to inform people.

**Dean Keddy-Hector** [01:11:01] Yeah. It seemed like once this started, there was just one episode after another, and ultimately led to the dissolution of our program, like movement of the database into the Wildlife division. But yeah, they were, gosh, controversies involving like data fabrication and data suppression that involved golden-cheeks and Eurycea salamanders and Arkansas river shiners and the San Marcos wild rice.

**Dean Keddy-Hector** [01:11:39] And there'd be some trigger that would, because we had oversight responsibilities for endangered species issues, we had to respond honestly. But sometimes that gets you in trouble. And, yeah, scientists often don't behave well in government settings. But yet, I think the whole staff was pretty committed to maintaining our standards and. But that created the pressure on us.

**Dean Keddy-Hector** [01:12:13] I remember, gosh, when Ann Richards was in the process of losing her gubernatorial election to George Bush, she got really upset at Andy Sansom because of some endangered species issue that happened. It made the newspapers. And, you know, so there's a, you know, politician trying to get re-elected. And at the time, she was pretty desperate to get re-elected.

**Dean Keddy-Hector** [01:12:41] And then you have an endangered species issue crop its ugly head within one of her agencies that reflects poorly on her. So, then you get the, you get the blowback.

**Dean Keddy-Hector** [01:12:54] And, you know, we'd have like influential people on the outside writing in and writing the executive director, Andy Sansom, and criticizing members of our staff for something we'd said at a public meeting or published.

**Dean Keddy-Hector** [01:13:11] Oh, gosh, there was an episode where I reviewed a, I don't know, an environmental consulting firm's report about warblers, and I was asked to do that by our branch, and I did kind of an informal review of it, then passed it back to the guy not realizing, he was going to send it out to the developers. And so, they come back and threatened us with a lawsuit because of what they viewed as a derogatory review of their environmental report they'd done for some client. And then that generated a whole series of meetings between their attorneys and the department attorneys and fortunately they kept me out of it.

**Dean Keddy-Hector** [01:13:52] But then again, you sort of feel this steady pressure to constrain your point of view, just keep a low profile and get along. And I think our group was feisty enough not to handle the get-along part very well.

**Dean Keddy-Hector** [01:14:10] Anyway, you know, you work in an environment where you have to deal with that, you know, you talk about getting an ulcer or worse. Yeah.

**Dean Keddy-Hector** [01:14:23] You know, earlier...

**Dean Keddy-Hector** [01:14:24] There was another one where we were working on endangered...

**Dean Keddy-Hector** [01:14:27] Go ahead.

**David Todd** [01:14:28] No, I was just curious: earlier, I think, and this sort of, I guess, reminds me of the difficulty of pinning down the truth and how fact and fiction sort of merge,

especially these days. Maybe less so then. But, I think that you mentioned that there had been charges that data were being suppressed or fabricated - not just about the golden-cheeked warbler - but about San Marcos wild rice and other rare species. And I was wondering if you could talk a little bit more about these sort of challenges to the science and the data that were being collected at the Natural Heritage program.

**Dean Keddy-Hector** [01:15:20] Well, you have scientists, competent scientists, working on an issue. They should be allowed to express their opinion, their evaluation, of that issue. If you have someone come in, especially someone in a supervisory role, and say, "Well, you have to change this", especially if the reason for changing it is political pressure, then you start to get into a tricky situation because, you know, now you're being asked to alter your own conclusions.

**Dean Keddy-Hector** [01:16:04] You know, back then I used to think, "Well, you know, I could see maybe being asked to delay release of a report because the politics are unfavorable right now. You know, not suppress it, but, say, hold off for a couple of weeks. But to then come in and alter the contents of the report or, you know, that's a different ballgame.

**Dean Keddy-Hector** [01:16:30] I think the worst case was us preparing a publication, well, contributing information for a publication about endangered and threatened animals that you could actually buy on Amazon nowadays for like about \$5. And right at the beginning, it says that landowners that follow these management guidelines are freed from concerns about Endangered Species Act restrictions. So, it was more than just an informational publication.

**Dean Keddy-Hector** [01:17:03] And there are things put in there in the golden-cheeked warbler section that I didn't agree with, and I reviewed that section and contributed photographs. I did the same thing for the aplomado falcon section there. But, you know, things like saying that a fence right-of-way, 20-foot fence right-of-way is not going to be detrimental, when we know that there was evidence reported from Fort Hood that the warblers were sensitive to edge effects.

**Dean Keddy-Hector** [01:17:30] And, well, the guy in charge of this would then submit drafts of that to Fish and Wildlife Service, who had their own oversight over the content, and then their staff would call us and say, "Well, did you really say this?" And at the time, I still do, I thought this was so humorous that, you know, someone's trying to allege that we're saying certain things that are designed to make it a little easier for landowners, and are assuming that we're not communicating with our liaisons at the Fish and Wildlife Service. We're all friends with, you know, it wasn't like two separate camps that didn't talk to each other.

**Dean Keddy-Hector** [01:18:15] And I thought, "Well, you know, why not put into something like that?" Just tell the landowner, "Fence rights-of-way may increase rates of predation, cowbird parasitism among nesting songbirds, including golden-cheeked warblers." Give them that information so that they at least know the whole story, as opposed to explicitly stating that it's not going to have an effect on the species.

**Dean Keddy-Hector** [01:18:47] And, you know, at any rate, it got into the publication. And there were other cases. I hadn't gone through the whole thing. I thought the aplomado falcon section was done pretty well. The golden-cheeked warbler was probably the most controversial. Maybe the second after that, the black-capped vireo one.

**Dean Keddy-Hector** [01:19:06] But well, you know, you don't want to mess with educational products, certainly not those. And there again, the pressures were extreme in those days. And I realize in a way, you know, the lower-level employees like me were somewhat more protected from termination, not that much. But it's the mid-level management, upper-level management that are really vulnerable. And, you know, not that that's an excuse, but I think that's just a fact.

**David Todd** [01:19:46] Well, you know, this whole problem of independence for scientists and for government employees seems to have been a problem that you tried to focus on in your job after you left Texas Parks and Wildlife. I believe you worked as a staff scientist for Texas Public Employees for Environmental Responsibility. And I was hoping you could talk a little bit about that group and your role there.

**Dean Keddy-Hector** [01:20:22] Um. Yeah, and I can't remember. Actually Scott Royder, down at the Sierra Club, may have been the one that linked me up with Jeff Ruch and the PEER group and really, really felt supportive of what they were doing, trying to represent whistleblowers mostly, or at least get information out about exactly what we were dealing with.

**Dean Keddy-Hector** [01:20:52] So when I left the department, I worked as what they called their staff scientist in Texas, and linked up with an environmental attorney. And gosh, I'm blanking out on his name, which is silly. It was really just me and him doing work in Texas, but they had received a bunch of money to do a ...

**David Todd** [01:21:22] Was that with David Frederick?

**Dean Keddy-Hector** [01:21:24] Yes. Thanks. I knew there was one name I was going to forget. Yeah. So Dave was fantastic. He would help me do open records requests, FOIAs.

**Dean Keddy-Hector** [01:21:37] And PEER had gotten a ton of money from some anonymous donor to do a website about Bush's environmental record because this coincided with his run-up to his first presidential election.

**Dean Keddy-Hector** [01:21:54] And so I actually wrote up an account of the Arkansas River shiner situation and salamanders. There was my Arkansas River shiner one - "Shining Us on with Sound Science". The other one was just called, "Salamander Wars". But I got access through open records requests to all the internal documents and was able to link that up on the website. Unfortunately, they've taken the website down now. It was called the, "Toxic Texas Tour". It had a nice map. You could click on locations and get a story put together about that story. I think I did one on sea turtles and the shrimp. It's the Turtle Excluder Devices. And, you know, about half a dozen articles which were kind of fun to put together. A little different writing for me - a more journalistic style.

**Dean Keddy-Hector** [01:22:50] And then I called it quits in the aftermath of Bush's first presidential election and went back to teaching.

**Dean Keddy-Hector** [01:23:05] But, you know, I'd get calls from employees that worked for the Forest Service that would ask for help. And, and, it was, it was disheartening. I talked to an employee who we could tell was really upset and kind of depressed about a situation in their office and not sure what to do about it. It's like your standard prescription as a PEER

employee, as a PEER representative, is to, "Well, you need to start keeping records. You need to write stuff down. And then you need to decide how badly you want this job".

**Dean Keddy-Hector** [01:23:41] You know, and try to tell them, you know, if you're in a hostile work environment (and that's solely in the eyes of the, you know, a person like him), you've got to decide if it's worth it in terms of health, effects on your health, on your marriage, to stick it out or get out of there.

**Dean Keddy-Hector** [01:24:05] And I would kind of, kind of be inclined to say, you probably need to get out of there if you're this upset. You know, it's pretty well known that employees, government or not, dealing with situations like this, you know, are going to deal with high blood pressure, alcoholism, you know, there are cardiovascular effects. They're going to be taking it out on their families and it's just hard to suppress all the anger you feel.

**Dean Keddy-Hector** [01:24:32] And, which, you know, isn't exactly what you really want. You want the employee to stay there and leak out information about what their agency's doing.

**Dean Keddy-Hector** [01:24:45] But I always felt like the personal cost of doing that is just, and especially since some of the health effects and marital effects are pretty irreversible, that it's probably better to get them out of there. Have them think of a plan, come up with a Plan B. You know, go back to teaching like I did.

**Dean Keddy-Hector** [01:25:04] But, you know, it gets so messy, because you walk into those positions being very idealistic. You're thinking, this is going to be a really neat job, and get to do the things I want to do here, and work with some really nice people. And it's hard to have to realize that you have to leave that behind and look for something fresh.

**Dean Keddy-Hector** [01:25:31] Well, you mentioned that sometimes the best thing to do is to return to something that is maybe further from the hot kitchen, you know.

**Dean Keddy-Hector** [01:25:44] Yeah.

**David Todd** [01:25:44] That's a little better for your family and your own health, and of course, something of interest to you. And I was curious if you could talk about the following chapter in your life, where I think you returned to teaching and were teaching biology at the Austin Community College and at Huston-Tillotson University, where I was excited to see that you started a new major and minor in environmental studies. Can you talk about, you know, that experience of teaching? And, you know, I'm also curious about it, not just from your standpoint behind the desk, but, you know, what sort of attitudes and interests you saw among your students in conservation.

**Dean Keddy-Hector** [01:26:33] Well. Gosh, moving... See, I taught at Texas State, just before I started Parks and Wildlife, and I also was teaching at ACC as a part-time instructor. And so it was easy for me to slip back into the adjunct pool at ACC. And, you know, I taught a lot of human anatomy physiology for pre-nursing majors, which are a lot of, usually, a fun group to work with - a lot of older-than-average students that who could, I don't know, relate to my Star Trek jokes and things like that, that won't work anymore.

**Dean Keddy-Hector** [01:27:11] And I taught zoology and field biology, more with traditional coeducational students. And I really loved doing field biology.

**Dean Keddy-Hector** [01:27:25] And then along the way, I think I taught part-time at Concordia in one year. And then I saw this part-time position at Huston-Tillotson and I took that job. And my immediate supervisor, Kathy Schwab, I can't remember how she recognized my name. Her husband, Jerry Schwab. Both are deceased now. They died in just the last couple of years though. Was the cousin of one of my, well, middle brother's best friends in grade school. And, you know, Austin can be a pretty tight community sometimes, usually not. But, and then it turned out one of my former TAs, that was a TA in a class that I took, or two classes that took at UT - Tom Scanlon - had worked there just before me and someone I'd palled around with when I was at UT, to go out and catch snakes and frogs and stuff like that.

**Dean Keddy-Hector** [01:28:37] So I had a kind of immediate like link to Huston-Tillotson and, and it was a whole new world for me. ACC is such a huge place now. Huston-Tillotson was the other extreme. You know, predominantly African-American student body. A lot of Latino students, lots of international students from Africa, Latin America and China. And so very cosmopolitan, a very diverse faculty group, but very laid-back, very welcoming. I mean, just unbelievably welcoming. Just lots of very nice people there.

**Dean Keddy-Hector** [01:29:19] And I felt so stupid because I'd grown up in Austin and was just totally ignorant about the nature of the campus and thought it was, thought the only people that could go there were African-Americans. And that was completely false.

**Dean Keddy-Hector** [01:29:32] And just a really nice small college. I mean, in a good year, we'd have seven or 800 students. And I, you know, immediately started doing a field biology class and getting students out, most of whom are like, except for the Latinos and the African students, most are urban. They've grown up in urban areas in parts of the United States. A lot of students from the big population centers in Texas and a lot from L.A. and Philadelphia and Chicago and things like that. Had no feel at all for the outdoors. So, it was really easy to get them out to places around Austin we could get to.

**Dean Keddy-Hector** [01:30:14] I think one of my highlight field trips was Hamilton Pool. And, you know, they would just be in awe of Hamilton Pool, the big grotto there, and then I'd be identifying plants for them and they might do field journals and learn to identify songbirds, well, birds in general, by sight, sound. And, gosh, a lot of the students just thrived on that.

**Dean Keddy-Hector** [01:30:43] Somewhere along there, we hired some additional faculty - Amanda Masino in particular, who I don't think had ever taught environmental biology, but really thrived on that. And the, oh gosh, I'm trying to remember the name of the person in the administration actually got some federal funding to develop an environmental studies minor. And so, I decided, well, I'm not going to have many people take it if it's just a minor, we need to make it a major of course.

**Dean Keddy-Hector** [01:31:17] And so, I began assembling a curriculum from courses we already had and then developing new courses. Like I developed a conservation biology course that I taught. And then doing things like, you know, tweaking the field biology so that non-majors could take it. So, we could use that as a recruiting tool.

**Dean Keddy-Hector** [01:31:44] And not real good success at attracting students to it. There again, most of the students there come from urban environments that are just not that interested or not that in touch with environmental sustainability issues.

**Dean Keddy-Hector** [01:32:02] But along the same time, Amanda Masino began developing a parallel program, basically an environmental racism program that, or environmental justice, I should say, not environmental racism. And, and so, we'd have like two, two programs there taught by faculty who were really interested in both environmental studies and environmental justice. So, we had people in the English department and Sociology department and History department and of course, the whole Biology faculty that really wanted to see these go.

**Dean Keddy-Hector** [01:32:46] And I left, I retired, about three years ago, just as Amanda was putting together the environmental justice program. And so, I'm hoping that will take off and somewhat change the composition of the, of our student body.

**Dean Keddy-Hector** [01:33:07] We got a partial-, full-time position funded by Parks and Wildlife to, in exchange for helping them recruit minorities and get some minorities in these programs involved in a field study, a coyote field study they were doing out at Decker Lake near Austin and hoping that relationship will continue.

**Dean Keddy-Hector** [01:33:31] Kind of nice to have an inside track getting our students into internships at Parks and Wildlife so they can see what, you know, see what life in that agency is like, and start thinking possibly about careers maybe they hadn't considered doing before.

**David Todd** [01:33:48] You know, one thing that I think is so terrific about your work at ACC, but particularly Huston-Tillotson, is this effort to try to make people who are not from the I mean, I hate to say this, sort of traditional, you know, white middle class background who seem to be the bulk of people you run into in science and conservation. And, you know, it seems like you were really making an effort there to make things more diverse. And I was wondering if you could talk about just the reaction that, you know, urban folks or black or brown or people who are from, you know, outside of the U.S., certainly outside of the kind of restrictions of white, middle class, you know, bubbles, how they reacted to some of the, you know, the scientific and conservation questions you were raising.

**Dean Keddy-Hector** [01:34:49] Well, I mean, first of all, these are mostly, almost entirely, first-generation college students. Which means, you know, your priority is to improve their basic academic skills and hopefully get them graduated and on to a decent career option.

**Dean Keddy-Hector** [01:35:15] The, the attitudes of students about these topics: most are pretty interested. I mean, it was ironic to me that some of the African students were a little dismissive of this. Coming from First World, I'm sorry, developing nations, that, in general, their big orientation was to go to med school. But there were a few, I think of one Nigerian student: Dikibujiri Diri is her name who is supposedly back in her own country doing environmental work there.

**Dean Keddy-Hector** [01:35:52] She wasn't an environmental studies major. She was one of our top biology majors. I assumed she would go to med school, but she's doing some sort of environmental activism now in her home country, which is really neat for me to see.

**Dean Keddy-Hector** [01:36:12] But it's tricky because you're, you know, you're trying to get these students through their programs at the same time, attract them to something you love, something I love. And yet knowing a lot of them, oh, maybe have unrealistic career objectives. Med school might be one depending on how good they are with their studies, or had a number

of students who wanted to go into forensics, criminal justice. And I'm guessing probably because of the way that career is portrayed in television shows.

**Dean Keddy-Hector** [01:36:54] You know, and that's no different for white, middle class students from college prep backgrounds who have unrealistic notions about what careers will be like. But hoping that we could attract a few, perhaps through the environmental internships they can get at state agencies in this field, or, better yet, internships with the local activist groups like Save Our Springs Alliance.

**Dean Keddy-Hector** [01:37:24] But, yeah, I would say in general, the students there don't have the hard-core mercenary, super hard-core mercenary approach that I remember from UT when I was a student there among pre-meds and pre-business. Solely monetary driven. Always have to be careful about over stereotyping. But I just remember UT being so hyper-competitive. And you don't get that sense at Huston-Tillotson. The students are very social with each other, and they're very social with their faculty members. And which means regardless of what career they go, you're having a tremendous influence on them, in part as being kind of a foster parental figure for them.

**Dean Keddy-Hector** [01:38:17] And, you know, frankly, after being there, gosh, I regretted not going there myself as an undergraduate, because I had problems my first year at UT, just because of its size and impersonality. And, you know, I felt like I would have done a lot better being at a tiny place like this school.

**David Todd** [01:38:41] That's a really great... Sorry.

**Dean Keddy-Hector** [01:38:44] No, go ahead.

**David Todd** [01:38:45] No, that helps me a lot to understand. You know, it seems like there's a distinction between what schools can offer. I mean, some are offering the academics, and some are offering a career track, and some are offering just the chance to be with adults and with their peers and socialize and feel a sense of community.

**David Todd** [01:39:14] Well, I realize that I'm probably going on too long. And I did want to be respectful of your time, and hope that we could maybe return once more to the golden-cheeked warbler where we began today.

**David Todd** [01:39:29] And I was interested to see - this is about seven years ago, 2015 - the golden-cheeked warbler situation came up again when the Texas Public Policy Foundation, with some, I think, parallel support from the General Land Office, filed an effort to delist the golden-cheeked warbler. And I think there were also efforts at the Trump Administration level to undercut the Migratory Bird Treaty Act, which would have probably had impacts on the warbler as well. And I was hoping that you might have some insights about those two initiatives.

**Dean Keddy-Hector** [01:40:12] Well, it kind of goes back to what I was saying about the over-emphasis on population size versus habitat destruction. And, you know, the population size stuff serves as a distraction. And I think the people that publish these estimates need to be responsible about pointing all that out, that the big deal isn't how many birds there are. The big deal is what's the status of their habitat.



**Dean Keddy-Hector** [01:40:51] And outside groups like it's, in this case, it's ironic that the Heritage Program was part of General Land Office initially, and we used to, though, when I worked there, we'd think that, "Well, it would have been better off if Heritage been left at the General Land Office because that would have protected the group from this political pressure.

**Dean Keddy-Hector** [01:41:19] Of course, now that the General Land Office has inherited endangered species oversight responsibilities in Texas that wouldn't have worked that way. So now they've politicized the endangered species effort even more, and which means all of the science that comes out of there is now suspect.

**Dean Keddy-Hector** [01:41:44] You know, you've got this kind of a short, it's a pretty, pretty limited threshold between doing good science, and then as soon as you show some evidence of bias, that's going to taint everything else you do from that point onward.

**Dean Keddy-Hector** [01:42:02] And so, if you have someone who purports to be a scientist representing the General Land Office, or the Texas Public Policy Foundation, and they're overtly presenting a political viewpoint to studies of golden-cheeks, well, then, you know, you know what's going on.

**Dean Keddy-Hector** [01:42:34] But yeah, it's a shame that they've moved the endangered species oversight from Parks and Wildlife, although it may give some relief to biologists within Parks and Wildlife who worked with endangered species. But it just kind of undercuts the legitimacy of scientific efforts that are linked to General Land Office or the Texas Public Policy Foundation. Hopefully that'll change at some point, but I doubt that it will.

**David Todd** [01:43:07] Okay. Well. So we've talked about the history of the bird and of course, your history as well, and had some discussion about sort of the current discussions about the warbler with the Public Policy Foundation and GLO controversies.

**David Todd** [01:43:30] Maybe you can look a little bit in the future and just tell us what you foresee for the golden-cheeked warbler. What might be in its future?

**Dean Keddy-Hector** [01:43:41] Oh, hard to say. I think a lot's going to depend on what happens in these counties along the Balcones Escarpment region and the City of Austin and San Antonio.

**Dean Keddy-Hector** [01:43:58] And, you know, from a local perspective, you know, if you love songbirds, who cares how many warblers there are? You want to have lots of warblers and other wildlife there in your county, close by, and so these are local objectives. And I think a lot is going to depend on the extent to which education influences people to promote growth of woodland in Texas.

**Dean Keddy-Hector** [01:44:35] And, you know, one thing I've been doing is helping my mom with a wildlife exemption on her property. And, you know, a big chunk of that we're setting aside as warbler habitat, even though there are no warblers there yet. But what could be easier? We're letting it, we're letting it re-forest, you know. And I'm putting in browsing exclosures and trying to mark out where the Texas oaks are and doing songbird surveys. But, you know, if you're trying to restore grassland there, then you're talking about have to spend a lot of money, and a lot of time and effort. But restoring woodland for a forest species, if you're patient, is pretty easy in this area because if you leave it alone, it will re-forest. It will become closed-canopy oak-juniper woodland.

**Dean Keddy-Hector** [01:45:25] And I think if you get across that point to people, especially now that they can get a wildlife exemption, that's a real cheap way to do it. And it's something manageable for a lot of people.

**Dean Keddy-Hector** [01:45:37] But you've got to, you've got to deal with these misconceptions or oversimplifications about juniper as a water-sucking weed or about, you know, misconceptions that there wasn't juniper here when this was settled and, you know, view it as a constructive activity.

**Dean Keddy-Hector** [01:45:55] And I know my mom gets pressure from, I don't know if they're neighbors or what not, about why she doesn't clear all the juniper on her 60 acres. And I say, "Well, you know, that takes lots of money. And plus, you don't have cattle. And so why do it?"

**Dean Keddy-Hector** [01:46:14] Yeah, I think that's the key. If we can switch that thinking among landowners, and not necessarily large-scale landowners, but people like my mom that own 60 acres or like we own 15. And, sort of piece it together little by little.

**Dean Keddy-Hector** [01:46:39] Regardless of the listing status of the golden-cheek: I mean, it's still a high -profile endemic species in Texas. It doesn't matter whether it's endangered or threatened in terms of it being a very, very productive, very constructive to try to maintain the species here there.

**David Todd** [01:47:00] Okay. Well, we have skipped around and covered lots of territory and I hope that we haven't skipped over something that we should have discussed. And so I just wanted to give you this opening here at the end of our visit to just add anything that you think wasn't given full attention earlier.

**Dean Keddy-Hector** [01:47:30] I think we've done a pretty good job. And we could, we could talk for days about this stuff. And, but, yeah, I don't have anything to add. I think what I just said about my mom's place maybe is a good, good closing statement. I was hoping to leave it on a positive note. And I think that's basically a positive note.

**David Todd** [01:47:57] Yeah. I love the idea of you giving a legacy, with your mom, to, you know, trees of the future, birds of the future. It seems like a very hopeful gesture.

**Dean Keddy-Hector** [01:48:16] Yeah. I think it's doable. You know, I don't know the extent to which it would offset, you know, government-subsidized brush-clearing, but it could. I mean, thousands and thousands and thousands of small-scale landowners just want to get some information about how they can improve their property. And that's definitely one way I would advise them to do it.

**David Todd** [01:48:42] Well, thank you for your thoughts and your memories and your advice. Really, really helpful. And I just want to thank you as well for your time. So appreciate it.

**Dean Keddy-Hector** [01:48:54] Yeah, thanks for getting me involved. It's been good to actually go back through some of this stuff, because now I have to review all the warbler stuff that's been published in the last ten-plus years. That's kind of mind-boggling, but it's definitely interesting.

**David Todd** [01:49:11] It has been interesting. Well, thanks again. Hope you have a good day. And I hope our paths cross soon.

**Dean Keddy-Hector** [01:49:19] Same here, David.

**David Todd** [01:49:20] All right. You take care. Bye now.