Dr. Larry McKinney, Part One

Interviewed by Dr. Jen Brown
December 17th, 2020

Transcribed by Maxwell McClure

[Dr. Jen Brown]: Okay, we are recording. This is Jen Brown and I am on a video chat with Dr. Larry McKinney, and the date is December 17, 2020, and we are here to do an oral history about his life and career. And this is Part One, which will focus on his background and work at Texas Parks and Wildlife. So, for the record, do I have your permission to record this?

[Dr. Larry McKinney]: Yes, you do. This is Larry McKinney, glad to be here (Brown laughs).

[JB]: Thank you. Okay, um, well, I guess we'll just jump into it.

[LM]: Okay.

[JB]: And a good starting point here is, can you tell me more about your background and early life?

[LM]: Before college and all that stuff, is that what you're talking about? Go back to childhood deal (laughs)?

[JB]: Yeah.

[LM]: Well, I'm from West Texas and our family were some of the original settlers there. We've been on our homeplace in a little town called Coahoma, which no one knows where that is, but its near, , Big Spring, which probably no one knows that either, but near Midland, Odessa out in that part of West Texas, not far West Texas but right in the corner of the state close to Lubbock. And so, we've been on our home place for one hundred and twenty-five years, settlers and then ranchers and farmers and that type of thing. So that was my background. I spent my entire life there, obviously and went to a small high school in Coahoma. There were thirty-five in my graduating (laughs) class. It was pretty small, but it was a great life, outdoors and coming from a farm and agricultural background. I really appreciate that, I learned a really good work ethic from my father because he felt that if you weren't studying or playing sports, you need to be working. So, I studied and played sports a lot (laughs). My mother had tried to go to college, but economically she had to drop out. She wanted to be a librarian and could not so she wanted to make sure my sister and I did have an education. Something I never understood when I was young but we never knew actually how poor we were. We were basically sharecroppers and the drought of the fifties really hurt our family and we lost a lot of the farm and my dad had to take on other jobs. But again, I never knew that growing up and they made sure that we had a good education and had all we needed. And we never, my sister and I never knew, we didn't have much of anything. So, they were wonderful parents and it was a great start.

[2:40]

[JB]: What types of crops did you farm?

[LM]: Cotton for the most part, some milo and that, but cotton was the number one crop that we'd farm.

[JB]: Um-hm, and, uh, so you had, like, chores growing up, farm chores and—

[LM]: —Oh yeah, it was like I said, my dad didn't think work hurt you at all, and by the time when I was ten, in the summers, I was what's called hoeing cotton. My dad had this other job at a refinery and he would drop me off at the field in the morning on the way to work, and I would spend the morning walking half-mile up and down cotton rows hoeing cotton, and my mother would pick me up later in the morning for lunch. I was by myself all that time, and she would pick me up around lunch, and I would have lunch, and then I would stay home for the heat of the day which was pretty hot in West Texas, them back to the field. Then, my dad would come home from work around five and I would go with him and we would continue to work on whatever he was doing. If I wasn't playing sports or studying, I was working with him or on something, and by the time I was twelve, I was driving tractors in the field and those type of things, and by the time I was fourteen, I had a driver's license. In those days you could get a driver's license for farm trucks with a farm driver's license, but at fourteen, I could operate every farm implement on the farm, from cotton strippers to the cultivators and those type of things. So, we were full-blown into farming. I could do anything there. Strong work ethic and that type of thing.

[JB]: Yeah, and so growing up did you want to be a farmer and stay on the farm or did you have other plans?

[LM]: No, I definitely did not want to be a farmer. I wanted off that farm as fast and as far away as I could get. I really, I did. I mean, it was good outdoor work and all that type thing and I enjoyed it, but I really wanted to go places and get out of there because, I was inclined to the science side of things for some reason. My mother encouraged that, I guess. I was thinking about this the other day. One of the, we had no real access to, was a library in Coahoma, and no big bookstores, but my uncle who did get a degree at A&M [Texas A&M University-College Station], he did graduate from college, and he was an entomologist. He was working for the USDA [US Department of Agriculture] in that area. So, he lived in the Dallas area, so we'd go and visit there once or twice a year, and of course they had big stores there. It was really pretty incredible. And somehow, I stumbled across the Tom Swift, Junior books which no one now probably knows much about. , Tom Swift, Junior, it was a book for teenage kids, and it was all about science and Tom Swift and his buddy, Bud Barkley. They built atomic submarines and airplanes and solving mysteries So, I saved whatever money I could and I bought one of the books, or really all I could find or afford. that they had and I read them over and over. I think I had them memorized. I still have the entire collection at, , on a shelf at home. That really got me interested in science. I think that's really what did get me kind of going in that direction. I read all the time ,whatever I could find trying to figure out what Tom Swift was talking about.

[JB]: And so, you—what did you want to study when you went to college, then?

[LM]: Well, I've always been lucky throughout my life to have people that help me, mentors and that type of thing that really stepped up. I've just been lucky to be in right place at the right time I think to have that opportunity And I had when I went to high school and junior high and even high school, the science teacher, and in our school there was *the* science teacher, and it was a man named Phil Wynn. And he kind of took me under his wing, a couple of us that were interested in science, and he did whatever he could to allow us to explore science—I mean, we had full run of his high school science lab. When we wanted to do different things, he tried to acquire equipment and chemicals to help us do it, remarkable, really. I am surprised we did not blow ourselves up. That really focused me in on science. Interesting enough when we, like I said, there were thirty-five or so I'm my graduating class, about twelve boys in the class in front of me, ahead of us, one year ahead of us was about the same size but out of those two classes, I guess there would be probably twenty-five boys all together. There were three PhDs, a physicist, a chemist, and a biologist, out of those two classes, and the chemist, whose name is Richard White, was my best friend in school and we hung out together. So that was the science side, but what got me aimed, what focused me on marine science and oceanography was Jacques Cousteau. He came on TV in his *Silent World*, and I watched that show religiously and, I just fell in love with it. And I remember, I wrote in seventh grade, you have to write these themes about what you're going to do with your life, and I wrote a thing that I was going to be a marine biologist, and by the time I was in eighth grade, I had my future planned out. I was going to A&M because they had a Department of Oceanography, and I was, I made up my mind up and that's what I did.

[JB]: Hm, what attracted you to the Jacques Cousteau, TV series?

[7:59]

[LM]: Water (laughs) because in West Texas, this was the drought of the fifties. There was no water. I mean, in our area I don't think I saw moving water until I was in the first grade or something like that. A few years ago I was interviewed from a writer for *Texas Monthly*. They were doing an article on the drought of the fifties, and I happened to be interviewed about because I was growing up during that time and the story that I told, that was published in that article, was that because it had not rained, the sandstorms were so intense growing up that when at the end of the day at school when we had to go to our buses, and the buses would be parked a few hundred feet away from the school, in a big lot. There were times when the sandstorms were so intense and the visibility was so limited that we would have to assemble in the classrooms and all of us would hold hands and the teacher would take us to the bus because they were concerned we would not be, we could get lost and not find the bus and be lost in the sandstorm. That was how tough it was. So, I was enthralled with water and just couldn't believe that, and we did make some trips to the coast to here in the Coastal Bend, Port Aransas, first place I ever saw the ocean, and went fishing and that kind of sealed the deal when I actually saw it. So, that's what—and people wondered about, they said, "How in the world do you live out in the middle of the desert? How can you be comfortable on or in the ocean?" I said, "Well listen, it's really not much different than West Texas." I mean I was very comfortable, I'm still very comfortable in very wide-open flat spaces, and when you're on the ocean, it's the same thing. I get a little

uncomfortable when I get into the forest and into cities with the big buildings. It was not much of a change, really. It's big flat spaces.

[JB]: So, you, can you just maybe tell me a little bit more about the drought and kind of what you saw on your farm?

[LM]: Yeah, it was, and of course it was a huge issue for the entire state, which I subsequently learned and studied purposely because that reason, but our family, as I said, were original settlers out there farming and ranching. My grandfather was really more interested in ranching. My father was more interested in farming, but between them, we had something like, I don't know, four or five thousand acres that was part of the farm and ranch, and doing all right, but when the drought hit, the first thing that happened, I was fairly young at the time when all this was going on, but we lost all the cattle. They had to be sold off because there was nothing for them to eat and then my grandfather had sold some of the, first time ever, sold land, which is something, farmers or ranchers do not do is sell land, but when times get tough, if you have to sell land, that's as bad as it gets. But my father, he loved farming as I said, but he had to take a job and he was quite mechanically inclined. There was a big refinery in town, so he got a job in the electrical department there. And so, while I was growing up, my father had to have three jobs because he got in such debt on the farm. He raised cotton in the worst year of the drought. As he said, "I raise one bale of cotton and about forty roses." He raised roses for my mother, that's all he could do because nothing else would grow. He literally had three jobs. He kept farming. He worked at his refinery, and of all things, he repaired outboard motors, I mean, out in the middle of the desert, but he was really good at this. And that's one of my memories of my father. I would spend weekends working with him, because he worked on those on weekends, and he would go into town to the repair shop, and I would spend weekends with him as he was in town at this shop working on these boats and motors. I would help him with some things. I learned some mechanics, but mostly I just hung out with him. So, it was really, really difficult, , and it was difficult on a lot of people. I didn't understand this until many years after, but until three or four, I never really had a toy that was bought. My father made all of our toys for Christmas because we just didn't have money. I mean, that was just the reality of it. My sister and I didn't know that, but whatever, and even when times got a little better, my entire family, my uncles—and I was the first child of all the group there, they went together and bought a toy tractor to sit on and pedal around. It took all of them putting all their money together to buy one present. So it was difficult, but again, I never really knew that my parents made sure we had what we needed, and, but it was a difficult time, and a lot of farmers went out of business. A lot of my friends, my father's friends did as well, and it took my Dad fifteen years, almost fifteen years to recover from the drought of the fifties to the point where he was, he had paid back all his debts and really reestablished. So, it was difficult, and that was just our family, and that drought affected the entire state in way like that. So, many, many families, it really completely changed the landscape of farming from small farms like ours. I mean many others went out of business, but farms got incrementally larger because that's all they could do. So that started the whole shift in agriculture in the State of Texas from small farming to corporate, and people moved to the cities because you could not make a living on the farm. So, it was a big sociological change going on.

[JB]: Yeah, sounds like it. So, what did your parents think of you becoming a marine biologist? And then how did you have them get the money for college?

[LM]: Well my parents, and that was another thing, they encouraged whatever my sister and I wanted to do from an education standpoint, they were going to make sure that we could do it. I mean that's just—they saw that as their job. So, they sacrificed anything to make that possible. Again, we never knew this, that we had no money, until I grew up. I understand now and began to appreciate when I got older what they were doing. But they never hesitated to not do things for us to make sure that we got whatever we needed from an education standpoint. And so from going to college, I was always, I was fairly bright. I mean, I had some intellectual capacity, so that helped. I was valedictorian at the school, which again is not much, there was thirty-five students in the class, but it was that. And so I had good grades, and I was very active in sports, and at all times, my mother made sure I was always engaged in extracurricular things and this type of thing. So, I had a really good academic record and participatory type thing. I managed to get a number of scholarships locally to help. And of course in those days, '68, '69, '70, to go to school at A&M room, board, and tuition, it was five or six thousand dollars a year is what it would take. I mean that's not much, but in those days, it was a little bit more. But my father helped. He was, at the refinery. He became the head of the entire electrical division of this place, and so he helped me get summer jobs in summer. I got really good jobs because I had some mechanical skills and importantly I got off the farm because I obviously couldn't make money there, but I worked in refineries, out in the oil field, on pipelines, and I would make three to four thousand dollars in a summer and that would take care of part of my needs, and then I worked, well, at the school, always had a job with something in school. So, eventually, for example, my last two years I was a resident advisor in a dormitory. So, I got free room and board because I was the resident advisor and took care of the dorms. So, it was always that, working summers and working at school and scholarships and that kind of thing.

[JB]: Um-hm, well, can you tell me, um, more about (cleared throat) excuse me, more about your time at College Station and what you got interested in studying oceanography and that sort of thing?

[LM]: Yeah, it was, of course as I said, I was going to be a marine biologist or oceanographer, and as I said earlier, I've been fortunate to have mentors and people who stepped up to help me. When I was in school, we started a Marine Biology Club, a small group of us did at A&M, and it grew and because we had faculty advisors, a faculty member named Dr. Merrill Sweet, was a sponsor of the Marine Biology Club, and we went on field trips, and I got involved in that, and that type of thing just went through. And I got my degree, and then I wanted to, obviously this was in College Station, so I wanted to go take classes on the coast in Galveston at A&M in Galveston, and that's where I met a fellow named Dr. Sammy Ray. And Dr. Ray, he was one of the world's famous oyster experts, but he was really someone who was a great mentor to students. When I went and talked to him, I told him what I wanted to do and what I was interested in, and I said, "I'd like to come to study for the summer at Galveston, but I have to work." He hired me basically as a janitor at the marine lab there, what's called the Marine Lab in Galveston over the summer. So, I was, I could work in the evenings at night and take classes during the day and pay for the room and board there. So, Sammy helped me do that. And he eventually, when I got into graduate school, he became part of my graduate committee and helped me all along. So, he was a great supporter there and people like that, Dr. Sewell Hopkins, who is one of the world's famous invertebrate zoologists, he wrote papers on every phylum in

the group, so just people like that helped me throughout, to go and be a part of what I wanted to do.

[18:24]

[JB]: So, you just went straight to graduate school from your undergrad and—

[LM]: —Yeah it was a pretty naïve deal. I mean, again I didn't know what I was doing, I went through school. I was not particularly sophisticated. I was from West Texas, but I knew I wanted to get a graduate degree, and so I took the GREs and I applied for graduate school there at A&M, and they let me in. I don't know if they knew why they let me in. I didn't have a main professor or anything. I just got there, and again, somebody took me in under my wing, the head of biology, a fellow named Dr. George Krise, who was a big fisherman. And I was, by that time I fished a lot, and we used to go and fish together. So, he helped me, kind of get things lined out and he actually hooked me up with a fellow named Jimmy Stewart out at Scripps Oceanography and so that really opened my eyes up when I started looking. I might be able to go out there and go to graduate school. I was going to get a masters and go to get my PhD there or something. So, I began that kind of relationship, and I took on my first research project as I was going to graduate school. I had finished my classes pretty much, and I got the opportunity to be a part of a research program that looked at the impact of shell dredging on the coastal bays and whooping cranes. At that time, you could actually take these big dredges and go into bays and dredge up old oyster shell, not living oyster shell, but the fossilized oyster shell, from the past, and they used that to build roads and things like that. It was incredibly destructive, but back then, Texas had the attitude that the natural resources was kind of the Wild West and Texas had such abundant resources fish and crab and shrimp that no one thought you could ever harm them, you could just take as much as you want and no one thought about that much, and this is one of those cases. But finally, some were realizing that they might be affecting whooping cranes, and so I joined that study and I looked at the biology of the benthos, what was the impact of the dredging on the benthic animals that lived in the mud because that's where the whooping cranes fed eating crabs and that type of thing. That was really my first dive into science and I learned a little bit of ecology. I had to teach myself to identify lots of small animals that were in the mud, particularly things called amphipods. I became an expert on amphipods because no one knew much about them, and that got me a fellowship at the Smithsonian. I went up went to DC for my Smithsonian fellowship to work with some of the world's leading experts in these critters, and in fact at one point I thought I was going to go into a career and because a taxonomist and become the expert. There was a time when I was probably in the top ten or so people in the world as far as knowing about these things, but who cares about amphipods, I mean, they're ecologically important, but not a big deal to most of the world. But any rate, so it was easy to become an expert in them, and I did that. It did pay off. When I came back from the Smithsonian to A&M to work on my degree, I started a small consulting company because I had all this expertise so people from different consulting groups around the world were wanting to subcontract with me to identify these animals as part of these bigger projects. So, I started this company, and I hired a number of my fellow graduate students to help. By the time I was finishing up my degree, we had this company where I was funding probably six or eight of the graduate students and paying for big parts of their research and that type of thing. We brought in almost a million dollars in that

period of time, which was unheard of in those years. So, we were really successful. We had our own little business going in there but that's a side issue—

[22:25]

[JB]: —How old were you when you were doing that?

[LM]: Twenty-two, twenty-three, something like that, in that age. As I said, I kind of fell into things like that and so it really helped. It paid for my research and education, I really never had research funding, except for a teaching assistantship and this shellfish dredging grant, I paid for all my research through my consulting company and that of a couple other graduate students as a matter of fact. So, it worked out. But most importantly, that project dealing with the shell dredging, that's really began to get my interest. I mean, we did the research. We showed that there were impacts, and in fact, I wrote two chapters in a book because that was small part of this thing about this whole project. But nothing ever happened because of our research and that always was in the back of my mind. We did our report. We showed that there were impacts, and everybody said, "Okay, thank you very much for the reports." So I guess our reports went on the shelf, and they kept dredging shells. And, I was always uncomfortable about that but I never really thought further about it and it was years later when I went to work at Parks and Wildlife that I was able to actually take that science that I learned about shell dredging and it happened to be that I was in charge of the program to gain permits for shell dredging. And, I was able to write up permit requirements that were so strict that no one could get a permit (laughs). So, I put the end the to the shell dredging in the State of Texas based on that science that we developed all these years ago.

[JB]: Nice. Um, let's back up just a minute, then I want to talk about your work at Parks and Wildlife. So you mentioned you thought you might become a taxonomist? And then, what changed your mind, and how did you get into academia?

[LM]: Well, like I said I got really interested in amphipods and went to the Smithsonian and of course it was just this wonderful experience. I was around some of the world's leading taxonomists and scientists that were there at the National History Museum, and they were very supportive, encouraging. A fellow named Doctor Jerry Barnard, who was *the* world's leading expert in amphipods took me under his wing and I learned a lot. So, and I did a project in Antarctica on amphipods and found a lot of new species, a couple of new families and things like that. So, I was kind of going down that path, and so I went back to finish my degree because I didn't have my degree at the time, of course. I went back to work on that, and that's when I got involved with the whooping crane study. And I think what it was, that particular study was a field-oriented study, I did a lot of work out in the field collecting samples and that's really what attracted me more than sitting in a lab under at a microscope dissecting these small animals and doing taxonomy. I really enjoyed that more, and I liked the idea that, at the time, I thought that the study might have some impact, that science might really have some direct impact on doing something good. And so, I just kind of evolved that way. And some other opportunities came along to look at to build those types of projects. It just kind of drew me into doing fieldwork and a lot of it had to do with the diving, which I was very interested in. I taught myself how to dive when I was in high school, and the projects that I took up later required diving and I enjoyed

that. And so, that kind of drove me that way. Now, I've always kept up my interest in amphipods I still, to this day, I keep a microscope and some things to work on amphipods, if I get the chance. I've helped a couple of our graduate students here at the institute [Harte Research Institute] when they've had to identify amphipods. So, I've got to keep it in the back of my mind, but I never really got to develop it like I thought I might.

[JB]: So just for like me and others who have no clue about (laughs) what amphipods are, could you describe them?

[LM]: Always yeah, yeah, that's why I always get that question, and I should have done that in the beginning. If you think of, if you take a shrimp and you just squash it flat so it looks like a flea and it's about the size of your fingernail or smaller, these are things that are called amphipods. They are crustacea related to shrimps and crabs, just a small version of it. They're very abundant. There are many that live in all types of habitats, but mostly a lot of them in the benthos or in the mud, and next to polychaete worms, they're probably one of the most important food sources for a lot of animals. They're really important in the food chain because they're so numerous. So, that's why they have some value, but they're very diverse to occur everywhere, so, in the marine world.

[JB]: Um-hm, in freshwater, too, correct?

[LM]: Oh yes, they're freshwater as well, and I did do my dissertation on the distribution and origin of amphipods in the Gulf of Mexico and the Caribbean Sea, and I get a lot of kidding about my research project because basically what I had the opportunity to travel all over the Gulf of Mexico and the Caribbean, all the Caribbean islands into Mexico and Honduras, all the coral reefs there off Cuba, collecting these things. So, my graduate research was one big trip to the Caribbean (laughs). As people said I "spent all my time on beaches in the Caribbean." So, it was fun. It was nice.

[JB]: How long did that take you?

[LM]: It took me a little bit. It was four years to get it all done and my dissertation was four hundred fifty pages long. It was a significant piece of work. I never got a master's. I was going to do this as a master's. I told you I was going to do, get a master's and go to Scripps and had it all set up. It was a research scientist at Scripps, Jimmy Stewart, not the actor, Jimmy Stewart. And I was going got go with him, and unfortunately, he passed away as I was just working my master's, and so I didn't know what I was going to do. I talked to Dr. Sweet, who was a mentor of mine I mentioned earlier. And Dr. Sweet said, "Well, Larry, you got so much work done on these amphipods towards your master's. Why don't you just skip master's? And I'll be your major professor and chair, and just get your PhD." He said, "You already spent three years on. Spend another two years, you're going got do it anyway." And so, I went straight to my PhD, and just finished up there.

[JB]: Hm, nice. And then so after your graduated you taught at A&M in Galveston?

[LM]: Yeah, I did. I was teaching there and working on a research project. We had a very large project with the Department of Energy that I was co-PI on, which was, at the time, they were trying to create these strategic petroleum reserves, and they were doing that by dissolving centers of these huge salt domes to store oil. So, when they dissolve these salt domes—of course, there was incredibly very concentrated brine that they generated and they pumped it offshore to get rid of it. And it takes millions of gallons a day to create these huge caverns to put the oil in. And so, the concern was, "What would be the impact of this concentrated brine on marine life?" And so we got the grant to study that, and it was an eight year contract. It was a long research program, So, I was there teaching and working on this research project for that time. So, that's where I started. So, it's a very typical faculty-researcher type thing. I taught invertebrate zoology and did work from the research side of things as well for that time.

[JB]: And then how did you move to Texas Parks and Wildlife?

[LM]: Yeah, it was as I was working at A&M in Galveston. I mean I was always an okay scientist, but what I found to be very good at is working in teams of scientists. I was really good at putting proposals together and building teams up and then more or less managing, bio-politician type I guess you would call it. But anyway, I was really good at that. I was an okay scientist, but I was much better in organizing and working these big field projects. Eventually, I was asked to run what was called the environmental engineering laboratory there in Galveston. I actually set it up. And so, I had two research vessels that I was managing and doing this research project, and so basically, I was writing proposals and managing ten or twelve researchers that kind of come together. I was just running really hard at that, and it was actually kind of burning me out. I really was not spending so much time in biology but really just writing and managing and I didn't think I really wanted to do that at that time. I had a colleague get in touch with me, a fellow named Andy Landry. He called me and said, "Larry, there's a job opening up at Texas Parks and Wildlife. The legislature has taken the Parks and Wildlife Agency through sunset," and this happens in agencies every ten or twelve years, a Texas state agency is dissolved, and you have to reapply to the legislature to keep going so that gives them a chance to see if that agency is really worth keeping or how to change it. And interesting enough, the Texas legislature felt that Parks and Wildlife did not have enough environmental programs and was too much focused on just managing deer, bass, and fish, and quail like that, what we would call the "hook and bullet" type thing. It was just fisheries biologists and wildlife biologists, and all they did was set bag limits and things like that, and the legislature and other groups during that sunset period said, "If you're really going to protect the fish and wildlife in this state, you're going got have to think about water quality, and habitat loss, and all these things. So, you need to have a resource protection department, you need to have a capacity to look into environmental issues." So, he said they were looking for someone to come in, an academic like myself., would I go into Parks and Wildlife for two or three years and help them start up this resource protection division, this environmental division? I was getting a little burned out with managing research so, I thought it would be a good kind of sabbatical. I'll get my head on straight. I'll do something different, then I can decide where I want to go. And I said, "Sure, I'll come there for three years and help do that." And I teamed up with a woman named Susan Rieff. She was to be the director of the division at the time and I was the assistant director. Fairly quickly, she went on to work for the governor, Ann Richards. She became Ann Richards' Chief Environmental Director, and I became the Director of Resource Protection. As I said, I was supposed to stay there for three

years to help them form up the division, and then twenty-three years later, I was still there. But the reason I stayed was that what I mentioned earlier. As head of resource protection division, one of the programs that came under my wing was this sand, shell, and gravel permit program that permitted shell dredging. I took advantage of the science that I had learned, the research that I had come up with on the impact of dredging on whooping cranes. I rewrote the regulations and the permit conditions, and no one could meet those permit conditions, so there was never a permit issued for dredging. So, I stopped that very destructive practice and that really got me hooked, so to speak. It meant something to me that I was taking science and actually using what we learned, the science, and solving a problem and making a real difference. And so that's what I wanted to do. I enjoyed research. I enjoyed working with my amphipods and those types of things, but there was just something about really having an impact and seeing results immediately from what you're doing that hooked me. So, I stayed there for twenty-three years doing just that.

[JB]: So, can you tell me a little bit more about how dredging was destructive and what you found in all these studies?

[LM]: Yeah, when I say dredging, it's literally that. There's a huge rotating shovel, if you want to call it that, that they would drop into the bottom of the bay. near a live oyster reefs. Oyster reefs tend to grow in one place because the conditions are just right. And oysters have been here obviously for thousands and thousands and years, so these reefs would have built up over that time forming layers of fossil shell under live reef. As the sea level rose, oysters kept growing and the old oysters would be buried underneath it. And so many times, these oyster reefs, the condition would change and the oyster reef might die or be displaced. leaving all this oyster shell that was buried ten, twenty to fifty feet down into the sediment. Well, that oyster shell is calcium carbonate, and it makes a very good road and excellent cement. It works as one of the best road bases other than asphalt that you can have, and it was important for chicken feed, and all kinds of other products, very high quality calcium. So, companies that had big dredges, these big machines were allowed to come in and actually mine the bay bottoms to take this oyster shell out and use it for road bases and that type of thing. That's what was going on. Of course, there was still live oyster reefs close to it and you can imagine digging into the bottom of a bay how much sediment and silt were stirred up and chemicals and all those types of things. there was not a lot of regulation with these folks. They would get much too close to live oyster reefs and sometimes just bury them in the mud and silt that came out of it.

[JB]: Yeah, and just going back to the whooping cranes, what impact did they have on the cranes?

[LM]: Well, one of the most important foods for whooping cranes are blue crabs. They really need those crabs. They're high energy. They need them for as they're preparing to fly back and forth on their migration routes. So, that's really important to them, and those blue crabs, obviously they're in the water column as eggs and larvae, and juveniles and those types of things. So, the sediments would clearly have an impact on crabs and crab habitat and that type of thing, affect the water quality for them and that. And they were right adjacent because that they would always be an impact beyond just blue crabs, just the sedimentation that would mess up the water in which the whooping cranes would try to feed.

[JB]: Okay, thank you. Okay so, twenty-three years, pretty long time to be at an agency (laughter).

[LM]: Yeah.

[JB]: But can you tell me about some of the projects you worked on and how you used science to solve the problems?

[LM]: Yeah, it was, and it was a very interesting time to be at Parks and Wildlife because it was a time when a lot of changes were happening. The department was trying to develop its environmental assessment capacity, and it was a time when we were changing from a focus on managing just those species, single species in most cases, that were of concern to commercial and recreational fishermen to the broader ecosystem. The agency was it was dominated by older white males to be honest and typically white. That was just the way it was at those times, There weren't many women in that time but society was changing. A lot of opportunity was opening particularly in the resource protection division to move forward and make some changes. Many of the resource protection responsibilities required more than fisheries biology. For example, one of the first activities that I was charged with there was to take a look at the impact of freshwater inflows on the bays. As a result of the drought of the fifties. You can see a lot of my career just keeps going back to the drought of the fifties where I started life in West Texas. Because of the drought off the fifties, many, many reservoirs were built in Texas. Texas really had no natural lakes to speak of. It had only two natural lakes over in East Texas before 1950. Now, there are hundreds of reservoirs, and they were all manmade. And when you built those reservoirs, particularly the big ones close to the coast, they intercepted the freshwater that normally would go into the bays and estuaries, and that freshwater inflow is really critical to the health of these estuaries. They provide the salinity gradients because all the animals have different stages of their life need different types of salinities. The water, freshwater, brings nutrients into the bays that would feed the food chain, the web of life that type of thing, bringing nutrients, fuel for the estuary. And they would bring sediments that would keep the bay bottoms from compacting and subsiding as sediments compacted, got deeper and deeper, new sediments would come in so the wetlands would not drown. It's really, critical in many aspects of estuarine ecology. So, it finally became to a point where we were diverting so much water from these estuaries because the Texas population was growing like crazy, it was decided that we needed to do something to determine how much freshwater each of these estuaries needed to keep themselves healthy to produce commercially and recreationally important species, shrimp, crabs, and fish, and all that. So I was charged with putting a program together to figure that out. And so, it got me the opportunity to bring in a whole diverse cadre of scientists into Parks and Wildlife, hydrologists, chemists, people who are outside the fisheries side of things. I even brought in attorneys and we put this whole team together. We spent almost ten years developing recommended freshwater inflows for every Texas bay. [41:32] And that was used to go into regulations and legislations to help set aside some of that water to try to make sure that we didn't destroy the entire Texas coast by taking the freshwater away from it. That was really what we were aiming at.

[JB]: Interesting. And , when you're putting the—you mentioned kind of the shift in agency that you're bringing in these new scientists and other professionals. Can you talk about that shift from what you called the "hook and bullet group" (laughs) to this new, more diverse group?

[LM]: Yeah, and this was, the point of it was that, that there was a realization that until that time, the biologists and the agency was focused on setting seasons, length of seasons to take certain animals, bag limits, how many fish you could take and their length. So, that's what they focused on. So, that's all that they really did. And in their defense, for many years before that, that's all they needed because, really, Texas was still rural. We have such abundant resources that we were not damaging the bays. The bays could absorb everything that we hit it with. And so that was fine. The bays remained healthy. But as Texas grew, and industry grew, and oil and gas developed, and people moved to the coast more and more, , we began to affect water quality. , we, , destroyed habitat by building houses and industry on the coast. So, we began to get to the point where our activities as humans could actually alter the natural environment. That was a first for Texas because Texas has always been, such a big state. We've had such abundant resources that if you used up resources in one place, you could just always go over the hill and there would be more there. And we've always had that kind of attitude in Texas that we're so big, resources are so abundant, we just keep moving. Well, we finally got to the point where there is no place left to move. So, we had to start taking care of the state. And so, this whole time that when I was at Parks and Wildlife in the seventies and eighties was a time of realization that resources are limited. Texas isn't as big as we thought it was. We can actually affect the environment. And so, we had to start taking steps like, "Okay, do we need to set aside water for fisheries?" Yes, we do. [44:00] "Do we need to protect water quality? Could it get bad enough that we couldn't swim in this water or that we can't eat the fish from it?" Yes, that has happened. So, that was really that realization. The governor's appointed Commissioners that oversee the agency were very supportive. They understood this, and so, we recognized that if Parks and Wildlife was going to protect fish and wildlife, we had to get into the game of water quality, habitat loss, environmental issues. We had to come to the table. We couldn't just stay in our little niche and just manage the fish, the wildlife, the crabs, the shrimp. We had to think bigger and we had to get in the fight to make sure we had water, water quality, that habitat was protected. And so that was my job in setting up the divisions. So, when I came to Parks and Wildlife and Susan and I started this, we had twelve biologists working for us. Now, by the time, I moved onto to Coastal Fishery Director about fifteen years later, we had one hundred and forty-four biologists, and chemists, and geologists, and attorneys all in this business of trying to deal with environmental issues. So, that's how it kind of evolved.

[JB]: And what was going on, you mentioned kind of a shift in Texas. What about, how did the agency deal with kind of Texas politics and the political landscape?

[LM]: Yeah, that was an interesting one. And at of course in that time, I was very active in the legislature. I was a double ace in being threatened to be fired by legislators. And that was kind of a game because we were always involved in reviewing projects and these projects had a lot of supporters and sometimes the legislature didn't like what we were doing. And so, they would, like I said, many times I would be threatened that if I kept doing this, I was going to be fired. And this was a peculiar issue in Parks and Wildlife that people didn't understand that it's the great strength of our agency. As with many state agencies, our agency was overseen by

commissioners that were appointed by the governor. In this case there were nine parks and wildlife commissioners all appointed by the governor. That was an effort to keep science and policy and economics and all of that kind of balance, and these commissioners were, for the most part, some of the wealthiest people in the state, most politically influential because next to being appointed to the Board of Regents for the University of Texas or A&M, this was the most desired appointment in the state. So, some of these folks, like I said, often very rich, always very influential, they, also were very interested in fish and wildlife. They often had big ranches focused on wildlife, especially deer. They love hunting and fishing and they wanted to be part of Parks and Wildlife because it meant something to them. They were for the most part really dedicated to what the agency was about. They became a wonderful buffer for me when and people, especially legislators, didn't understand this, but because these people are so powerful, I mean they could buy and sell legislators, if they wished to, they were not intimidated by politicians. They were far more influential than a Texas legislator. They didn't care much about them. They gave them political donations and they worked in big high level circles but mostly did not care for many of them. And so, what I came to discover was that as long as what I was proposing to do was based on good science, I could make the case to them that what I was doing would make sure that was protective for fish and wildlife but it wasn't something crazily environmental or some other agenda, that it was really focused on that, they had my back. And for twenty-three years, I worked with some sixty or so different commissioners, and there was only a couple of them that were jerks. I won't say who they were. But the vast majority of them, they were really interested in fish and wildlife. They really wanted to take care of things and they were so powerful that they gave us the cover to do that. And so, it was an incredibly effective organization for conservation, and I think it still is, but it certainly was then. And like I said, they had my back on a number of occasions, which I appreciated (Brown laughs).

[JB]: So, they never could fire you, huh?

[LM]: Well, the legislators tried. Several of them tried hard, but I had a great relationship with commissioners like Lee Bass and others that were really powerful and independent because they are wealthy. They are powerful. But they were and are really focused on making sure that we take care of Texas fish and wildlife, the environment. And so, they, as long as I was doing my job, they gave me the cover I needed to stay with it cover, and I appreciated that.

[JB]: Um-hm, when we talked last week, you also talked about some of the controversies you were involved in, particularly with endangered species. Can you tell me more about that?

[LM]: Yeah, at the department, there weren't many PhDs at TPWD when I came in. And I was the youngest division director. Eventually, I was the longest serving director there. So, I went through many executive directors of the agency. But I was either not bright enough or maybe I just I don't know what it was, but I was always willing to take on whatever issue came at TPWD. If there was a problem, I would take it on. And so, I was the person that got the jobs that the fishery biologists, the wildlife biologists, and other directors didn't want. And endangered species was one of those, and because it was very controversial at the time, there were some groups that had formed up that were very focused on private lands and they were very concerned that the whole Endangered Species Act was really nothing but a subterfuge to get their land to turn into public land or something else. They were very concerned about the power of the

Endangered Species Act regards to federal authority primarily, not state, but federal. But nonetheless, as I laughed about it, these folks, they really despised the federal agencies like the Fish and Wildlife Service and so forth, but they felt that the state agencies were "just a lesser snake" as they call them. "The big snake may have been the federal agencies with the Endangered Species Act, but you guys in the state are just lesser snakes. So, you're just in the same boat." So, they were always giving us issues. I was kind of naïve when I took it on. But again, I had a good science team together. One of the programs that came to be as part of TPWD was the Natural Heritage Program [51:04]. These were programs started by the Nature Conservancy. They were science-based programs to look at endangered species. And I don't know exactly what happened, but the Nature Conservancy decided they would no longer support these Natural Heritage Programs, funding I suppose, or politics. And so, they were trying to get them embedded in various states resource agencies and so forth, and in fact, the State of Texas took on the Natural Heritage Program for TNC and it eventually came under my oversight. And a wonderful group of scientists, experts on everything endangered from plants, to invertebrates, to fish, and birds, anything you can think of. There were like six or ten of these folks that really knew their business, very effective. And so, because they were working with endangered species, this land rights group decided that the program had to go and that group of landowners were very influential with the legislature. The landowners decided that the Natural Heritage Program had to be disbanded because they were a threat to them. And it just so happens that two of our commissioners were up for confirmation, when you become a commissioner at Parks and Wildlife, you had to be approved by the Senate. You had to go through a Senate appointment process. And so, the two of the newer commissioners that were coming on board when they were having their hearings in the Senate, they said they were just bombarded with questions, "Are you going to disband the Natural Heritage Program? Are you going got get rid of it?" And this type of thing, and one of those commissioners was Nolan Ryan, yes, the pitcher, Nolan Ryan. He got bombarded, and another was Mickey Burleson, one of the first women commissioners at Parks and Wildlife. She was a big advocate of the Nature Conservancy. So, she came to me and said, "Larry, I'm so worried. I'm afraid we're going to lose this entire program and we're going to have to fire all these biologists, and we really need them." And I said, "No, don't worry about it. I know what to do." Understand, this is my third or fourth legislative session, I said, "Commissioner, I've got an idea. Don't worry about it. I think I can fix this." So, I went into the office one morning a day after that and, I got all the org charts out and I said, "Okay, I'm getting rid of the Natural Heritage Program." And all my deputies and the head of the program said, "What are you doing?" They thought I was abandoning them. I said, "Yeah, now you are the Texas Parks and Wildlife Endangered Species Program." And, they said, "What?" I said, "Yeah, that's all it's going to be. I have disbanded the Natural Heritage Program. You're all going to be the same, but you're not the Natural Heritage Program anymore." And they said, "Okay, I don't know what that means." I told them to go back to work and not worry and, I was able to tell the Texas legislature, "Yes, I got rid of the Natural Heritage Program. It doesn't exist anymore." But the same people were always there. They did the same job. They just had a different name. But that made the Legislature and the landowner group happy and they went away and left us alone with that program, that went on for years (laughter). So, sometimes names are important. I get it, but perception is there too.

[JB]: Um, so, can you tell me more about this Trans-Pecos—what was the name of it?

[LM]: I think it was Trans-Pecos Heritage Group. I think that's what they were called Federation or Foundation. I'm sorry, I'm probably getting the name messed up. And they were out in West Texas. There were big ranches and lands out there, and they work pretty independently, and they were very concerned, and I don't want to mischaracterize what they were at the time, but I'll try to summarize. They were concerned that because they had big ranches in West Texas, there were many plants, particularly plants that were endangered that would be on private lands there, not just public lands, but private lands, and, animals, fish in some of the streams, and snakes, and a whole range of things out there because it's out there in the Trans-Pecos toward the Big Bend of Texas. It was a really wonderful biological place, but a lot of rare species and things. And they were on private land. So, they were concerned that the federal government would come in and confiscate their lands to set the lands aside to protect these endangered species or in some way would limit their ability to ranch or farm or whatever they were doing, And so, they got themselves organized [54:48] to make sure that they were protected and they became very politically powerful because of a lot of oil and gas there, and the big ranches, and that type of thing. I do feel that they went a little bit overboard. They were a little too concerned, but they had a perception they were dealing with the reality. I just knew that from a state perspective, it was not that big of an issue, I didn't think. But anyway, I got involved even on the federal side and I actually ended up looking—because I come from that land out there myself. I mean, my father, my grandfather, we were ranchers and farmers, so I had an appreciation for it. That's where I grew up, so I could at least talk with these folks. I mean, we had good conversations. I became good friends with a number of them, and because I was from Texas, West Texas, I mean, my family had been in Texas since there was a Texas. I had that kind of connection, so I could really—like I said, I was an even lesser snake, so they talked to me. But I ended up going and testifying to Congress and part of what I proposed actually changed the Endangered Species Act. I convinced Congress and through that testimony and others, that instead of trying to regulate these landowners, let's build cooperative programs with them so that if they did things to increase number of endangered species on their property, they wouldn't be held liable for that increase because they would not be liable for it, and give them incentive programs. So, the Endangered Species Act changed and added a number of cooperative programs for landowners. And so, it kind of calmed that down after a while. So that was one of the things that we were able to accomplish, helping these landowners allay those concerns and fears about taking their land by trying to turn them into partners. Our whole point was, "Let's turn them into partners not opponents," and to some extent, that worked.

[JB]: Okay, and you also had talked about when you were dealing with the endangered species that you had to have game wardens guard your house?

[LM]: Well, there was that, yes, I mean, it was not love and roses and all these things. There was two bird species, black-capped vireo and golden-cheeked warbler, that were designated endangered species and very common in the Hill Country. And they live in cedar trees and various areas. They're different birds living in different parts of habitat, but they were quite abundant, really, in the Hill Country, and then they were designated as endangered. This was in the Hill Country. So, this was not the Trans-Pecos group but another group of landowners that still hated endangered species program. We were trying to work with them, I was trying to use the same concept of trying to work with landowners to allay them, to allay their fear because the black-capped vireos and the golden-cheeked warblers' habitat were in areas on hillsides of

cedars and hillsides so that people didn't do anything with anyway. But nonetheless, there was a concern about impact on people's ability to use their land. The problem was particularly acute right after the birds were listed and the rules were coming out about what you could or couldn't do with your land. There was a lot of concern from landowners about what would happen. And they got very heated, very personal, and so I wasn't going to allow any of my own biologists to get in the middle of that because it was somewhat dangerous. So, I handled all the public meetings, and issues, contacts with the public myself just because I was concerned about my scientists. I was concerned because people are people, and they can get violent, and so I became kind of the focal point of this, for these folks. And so, actually, there were some threats made, and it got that personal. So, game wardens had to travel with me and kind of keep an eye on my house out in, I lived outside of Austin, because they were afraid people would find out where I lived, and I was certainly concerned about my family. So, I had to be careful with that that. So, that was the point. I gave a talk on these birds at Fredericksburg, oddly enough from the back of a semi at a racetrack one time. I mean, it was out in the middle of the track, it was at night and I was on the back of a flatbed truck, and people were in the stands of the racetrack, and there were many unhappy landowners. The federal biologists refused to come to the meeting. They thought it was too dangerous and so I said I would go because someone needed to answer these people's questions. The worst thing we could do is not talk to these people and try to give them the facts. And so, I did. I go to this racetrack, with my two wardens, and it went on for a long time in the evening, and it worked out okay after a little shouting. We had great questions. It was feisty and I had my game wardens with me and all that, but it went on to near midnight. I was so tired, and we didn't have cellphones back then in those days, so I was so tired and instead of driving all the way home because I was falling asleep, which is a couple hour drive, I just stopped at a little hotel there. I said, "I just need to get some sleep for an hour or so because I was afraid I would fall asleep in the car." So, I stayed in a hotel, but being really kind of dumb about it, I overslept, I did not call my wife even though we do have phones in the hotel room. So, I didn't call her to tell her I wasn't coming home that night, and I was going to call her in the morning, but it was late, and she didn't sleep at all that night. And the first thing in the morning, she called my boss who was the director, Andy Sansom, and they had the game wardens and the police out looking for me. They thought I had been killed. It was the closest I ever came to being fired by an executive director because he was so mad at me. He was so angry. He thought I actually may have been killed in this thing. And, so, yeah that was one of those stories I do not forget (Brown laughs).

[JB]: Well sounds pretty heated. I mean, I didn't really ask about this. So, you have, kids and—

[LM]: —I have a son.

[JB]: Okay.

[LM]: Yeah, he's in his late twenties now. He is working on a degree in biology. He's an algae person. He wants grow algae (laughs), so he's kind of following after dad a little bit. But, so, he's enjoying it trying to get—algae and oysters is what he's interested in.

[JB]: Neat, and your poor wife, that story is (laughter)—

[LM]: —Yeah, yeah, so, I keep in contact with her now. I always let her know exactly where I am. Cellphones have been great (Brown laughs).

[JB]: Yeah, great, well, we've been going about an hour. Do you need a break or anything?

[LM]: No, it's up to you. Whatever you want to do, I'm fine. How long are we going to go today?

[JB]: However long you want, or you get tired of talking.

[LM]: I'm good. I can talk no problem. You're the one who (Brown laughs)—

[JB]: —No, I'm good, um, fascinating career, thank you for talking to me. Okay, well, we can keep going if you're fine with that.

[LM]: Okay, that's fine. No, I'm fine.

[JB]: Um, all right, so we talked about endangered species. Can you tell me more about your role in dealing with what you call "destructive commercial fishing practices?"

[LM]: Yeah, that's been a long-term focus for me ever since that project of stopping shell dredging. I've been really concerned about that and it has been an ongoing issue, and even now at the end of my career, the last, probably the last official things I will do at as my career body of work will be to try to end the last bit of destructive fishing, oyster dredging. First, I ended shell dredging, but the next destructive fishing practice I took on was shrimping, shrimp fisheries, there are really two—bay and offshore. Shrimp life cycle requires that they go offshore as adults and spawn and produce eggs. Those eggs come back on the current, and go into the bays, and drift up to the upper end of the bays where they develop into small shrimp, and as they get larger, the shrimp move down the bays back offshore and they just continue that cycle. There were two or are two shrimping industries that grow up around those shrimp [1:03:14]. One is the offshore fleet. That's what we all think of. These are where the big adults, the big shrimp boats we typically see in photos and drawings, that's what those are, and that makes the logical sense, by the way. The shrimp are the biggest there, fully mature and the most concentrated, easy to capture. But there is another shrimp fishery that developed in the bays and these are smaller boats, , and their focus was to get the shrimp right before they left the bay. So, these shrimp are smaller, but pretty close to adult, and so they'd try to capture them before the shrimp headed offshore. The problem with the bay shrimping was that for every pound of shrimp that they would take, they would also capture in their nets another ten pounds of everything else in the bay: crabs and other types of shrimp, lots of small fish, small red fish, small flounder, and then that bycatch, as it was called, it was just going back in the bay dead. So, I mean, so, it was very destructive to get those shrimp with the other part of the ecosystem. Also if they dredge, they would plow up the bottom, and sometimes when they're shrimping in some bays, they can plow the bottom up two or three times in a year, destroying the benthos, stirring it up, creating turbidity and all these types of things. And as with most fisheries, they were way over-capitalized. By that I mean that the shrimpers, they would buy their boats, their engines and all this. They had no, they couldn't afford to just pay cash for them, so they just had big loans to get

the boats and they keep operating. They had to catch shrimp and if the shrimp was having a bad year or the shrimp were small, they just had to shrimp harder because they had to make money to make their payments. So, they were in a no-win situation where they could have some good years and get by and do fine, but there were so many of them. There were just too many shrimpers, there were like three thousand or so of these boats, little small shrimp boats, operating on the Texas coast, way too many, too competitive, so there were just so many boats they couldn't make money because they were competing with each other. So, just like many, many fisheries, they just had to fish harder. When times got hard, they just fished more, and caused more destruction. They couldn't get out of that cycle, and we couldn't regulate them out of the cycle because they were at least politically powerful enough that when we went to the Texas legislature to try to regulate them, they would stop those regulations. We couldn't get them passed. They would fight them off. So, we finally talked, working with those shrimpers and legislators, which finally said, "Okay, let's do this. Let's put a limit on the number of licenses, shrimping licenses that we'll have." We're not going to issue anymore shrimp licenses, these three thousand or whatever it was. This is all that will ever be issued. Now, if you want a new shrimping license, you buy one from the existing pool. You can't have a new one, so now we have a limited pot. Then, I went to the Coastal Conservation Association, and this is where I first made connection with Coastal Conservation Association, where I really learned to appreciate recreational fishing and the conservation power that recreational anglers have and learn what a marvelous conservation tool recreational anglers can be. This is my first lesson in this [1:06:36]. And I went to them and I said, "Here's what I want to do. You have to get a saltwater fishing stamp to fish in in Texas waters. It's seven dollars. I want to add three dollars to that stamp and dedicate those three dollars to just buy back these shrimp licenses, basically I can't regulate bay shrimpers out of business, let's, just buy them." They supported it. And so, we started that program. Over several years, we spent something like fourteen million dollars buying these licenses back. We did it as an auction. Every year, we would say, "Okay, we have a certain amount of money." We went to those shrimpers and said, "If you're ready to get out of this business, tell me how much your license is worth, and we may buy it from you." It became like what's called a Dutch auction, a reverse auction. And so, the program started and the shrimpers said, "Well, I need six thousand dollars," and sometimes we would look at size of their boat, and their fishing record, how long they've been in business. We'd prioritize those bigger boats and those fishermen who had a record of fishing for a lot knowing that they would be in the business, and we started buying them back, we would pay them more if they were good fishermen. So, you can have someone there for example that only fished once or twice, a little bit in a year, maybe caught a few thousand pounds of shrimp. Well, we might give them five thousand dollars for their license, but if someone came up that had been fishing for twenty years and would catch several thousand pounds of shrimp on a regular basis, we might give them twenty thousand dollars for the license because that means we were taking more pressure out. And we eventually, over time, we took the shrimp fleet from about three thousand down to around fifteen hundred, about what it was in the sixties and seventies, and that's kind of where it's been today. And so, now, there's far less impact on the bays because of the bycatch and the industry themselves, they can actually make money because there are not too many of them. There is enough business for those left. And so, it worked out really well for the shrimpers and for recreational anglers because it took huge pressure off the bays. We saw great increases in redfish and spotted seatrout after. So, it was a wonderful program that worked pretty well.

[JB]: Where did you get the idea to buy back the licenses?

[LM]: I would like to claim it for myself, but not really, a fellow named Robin Reichers and Hal Osborn came up with the idea. I mean, it was kind of a joint thing. They really kind of came—Robin Reichers, who took my position: Director of Coastal Fisheries. He's an economist. So, that's the kind of diversity that we brought into the Parks and Wildlife. We never had economists before. We always had other—well, having an economist there, he thought out of the box a little bit. He said, "Well, they do this and other things." So, they, I would, I can't claim credit for that. It was their deal, but I sure, I was quick to figure out, "Yeah would work." It was really marvelous, so I was really happy—

[JB]: —Are there other kind of similar programs like that around the country?

[LM]: Yeah, we did get, it's—I'm trying to think back now at the time. Robin was a fishery economist, and I think where he may have gotten the idea was not in this country but in Australia, they started doing some of those things back in Australia. I think that's where. I may be messing that up, but I think there was some initial attempt to do things like that. So, it kind of started there, but no one's done this like we did like our buyback program here. No one's ever tried it since. I think one of the reasons was that we have, one of the things we have here in Texas was CCA because it started here. It used to be the Coastal Conservation, it was the, CCA, Coastal Conservation Association [1:10:25]. It started here, and I've always thought our saltwater fishermen here in Texas, our anglers, they're a pretty independent bunch. They can be pretty rowdy and can be pretty loud, but they will step up and do the right thing. And so, I don't know if other states could do that, but we, they were able to do it here. They were, as I said, the recreational fishermen here in Texas put their money where their mouth was. They stepped up, and when we ended that program, when we said we declared success, I said, "Okay, I told you I would drop that thee dollars off that license." And they all answered as a group, they said, "No don't do that. Keep that money. Keep it because we want to buy out the crab fishermen and trotliners and others. So, they have a program to start buying out other types of commercial fishermen. So, they're still doing it, and so, it's still there.

[JB]: Um-hm, that's neat. Were you involved at all in the turtle excluder devices and the regulations—

[LM]: Oh yeah, no, we were in the middle of that one, too, absolutely, because one, it was an endangered species, but also Coastal Fisheries. That was a really difficult time, too, and I know your listeners—again, these shrimpers were primarily offshore but inshore too because turtles, sea turtles, Kemp's ridleys in particular, but green and others as well, they were caught in these shrimp nets as they were going for shrimp. And, of course, turtles must breathe, and they would sometimes pull these nets for an hour or so, and if a turtle was in there, it was dead. And so, they would kill a lot of turtles. Although, it was difficult to prove that because obviously when they took their nets up, they threw the turtles overboard, and they're all offshore. But there it was really clear when you looked at the data, and we looked at that data at the peak of shrimping season offshore, the numbers of dead sea turtles that washed up on shore grew proportionately, and then when the shrimping season was over, the number of turtles lost came back down. So, the data was clear about that. And so, the idea was that you could modify these nets to partially

open them so that when a turtle came into the net, they would hit a certain part of the net and like a metal grate or other types of structures and pop them out the top of the net [1:12:57], but the shrimp would go through. Think of a grate or a set of steel bars on a jail. That's kind of what it was like. And so, the shrimp would go through, but the turtles were so big they would go out the top. Along with the turtles popping out of these turtle excluder devices, some shrimp went out the top, too, so the shrimpers were always complaining that reduced their shrimping efficiency by twenty percent or thirty. So, that was always a concern and it was a heated discussion, too, sometimes more than that. When we were working on the coast, all of us in Coastal Fisheries, we were allowed to take the Texas Parks and Wildlife logos off the vehicles, because you couldn't leave a vehicle on the coast. They would destroy the tires or tear it up because you were you were Parks and Wildlife. It got—they were pretty nasty in that regard.

[JB]: And what do you think, um, that obviously hadn't continued for a while. What changed there?

[LM]: I give a lot of credit to Texas Sea Grant, or Sea Grant, who, they, this was a group that's associated with land grant colleges, and their organization that came about to work with primarily commercial fisheries, but they're kind of like ag extension agents but for the coast, and a fellow named Gary Graham and others like him, really, they had a great connection with the shrimpers. They worked really closely with them. They got some good technology behind it, some good engineers and came up with some of these excluder devices that really minimized the shrimp loss, and then there was a big outreach, an education program that they did get across [1:14:36]. They had to come to some accommodation with dealing with endangered species or the whole industry could be really affected. And so over time, I think it evolved. People became used to it, and some of the old-timers in the shrimping fleet that just weren't going to do this, they left and the younger generation kind of got it, kind of understood it, and they came up with it. And so, it evolved into an acceptable device And so nowadays, no one really thinks much about it. They know they got to deal with it and seems to work.

[JB]: Um-hm. Well, it seems like you were involved at Fish and, or Parks and Wildlife, excuse me, in all sorts of different projects. Can you talk, I mean, are there any projects that stand out?

[LM]: One of my favorites had to do with a place called Lighthouse Lakes. Now, Lighthouse Lakes is an area that's adjacent to Port Aransas. It's an area of where there's a lot of mangroves, but very small. Mangroves there are three or four-foot-tall, and they create this maze, it's really literally like a maze in the water in the bay there that you can paddle through. It's very shallow, a couple feet of water, with a lot of fish there, and the Lydia Ann Lighthouse at one edge of it, so it's beautiful habitat, historic and a very special place right in the middle of a densely populated area, and the water is clear and full of life. While I was in Austin as part of my job as fishery director, I was always interested in actually fishing, and I had a colleague at the department named Bill Harvey, also interested in fishing and I became friends with a fellow named Will Myers in Port Aransas. He was a very active conservationist, very interested in fisheries issues. And so, he was working with us on some issues, and he introduced me to Lighthouse Lakes and he introduced me to kayaks and to fly fishing. I learned, I taught myself with him to fly fish there. And so, I fell in love with Lighthouse Lakes. And when we were fishing, there weren't a lot of kayaks around, we built our own kayaks to some extent. Or, there was a few kayak makers

in California that made these kayaks that were made for diving that so the divers could go out past the kelp. And so, they had big cargo spaces that work great for fishing. So, we would get those. Of course, nowadays, there are kayaks everywhere. And so we started fishing out there a lot, so much so that I would take my family there on Thanksgiving, what we did for Thanksgiving, we didn't have Thanksgiving dinner, we went fishing at Lighthouse Lakes every Thanksgiving on Thanksgiving Day for ten years probably. We fished Lighthouse Lakes. That was our Thanksgiving. And so, and it is a marvelous place. Because I could see growing pressure on fisheries at Parks and Wildlife, I became to be concerned about the lakes. I said, "At some point this could be developed. This could be industrialized. I would hate for it to be lost. I think it should be a state park." Bill Harvey and I started talking and Will Myers as well, "What can we do?" We said, "We need a constituency out here. We need people to be coming to Lighthouse Lakes so that if anything were ever to threaten it, we would have a big group of people that would try to defend it." But interesting enough, people were not coming into the lakes because they were concerned that they might get lost out at Lighthouse Lakes. I mean, we would come back from paddling at the end of the day and pull up and people would come by in cars and said, "Boy we'd like to do that, but I'm afraid that if we got out there, how do you find your way around?" And I would tell that it's really shallow, so although when you're paddling the mangroves are up at head high, but if you ever get lost, all you got to do is stand up (laughs). Anyway, so I came up with this idea that, "Well, if we put some marker poles out here and with some numbers on them and came up with a map, as people paddled around as they came on these markers, they can look on the map and see where they were. And fortunately, Bill Harvey was a very technically oriented guy. He really understood things I didn't about technology. And just that time handheld GPSs were coming out, and so he came up with the idea, he said, "Well, let's not only just make a map, let's do, let's put these poles down and use GPSs so people can take a handheld GPS and do what they want. So, long story short, we came up with this scheme to put these poles out. We found a map maker in Houston, Shoreline Press, who would make these aerial maps, and so, we built the first kayak paddling trail in the State of Texas, and that was Lighthouse Lakes. And it caught on so much that we built trails up and down the coast, and they turned into river trails, and so the entire Texas Paddling Trail started at Lighthouse Lakes with Bill Harvey, Myers, and myself just wanting to make sure that someone protected that place. So, that's how it started.

[JB]: Is—

[LM]: —It's my favorite project and it still is.

[JB]: Oh yeah? And do you go out there and fish still?

[LM]: I don't go too much anymore. I do occasionally, I still love it, but there are a lot of people out there now (laughs). I liked it when no one was there. It was my getaway place. But it still is, and I would tell people it's very special, I mean, I've been fortunate in being able to travel all over Texas. I have several places that I think are just very special, and in the Gulf of Mexico . But in Texas several are just, I feel like, *my* places. This is one, Lighthouse Lakes , and the absolute best time, it almost, this time of year, we're in now [fall], getting into December and we get our first real cold front, when it gets really nasty, and the temperatures get into the thirties and forties for a couple of days, and the wind's blowing really hard, eventually that wind will die

and we'll have the blue skies again, and that's when you want to be out on Lighthouse Lakes immediately after that and then paddle though those mangroves because the mangroves will be full of birds because the birds have gotten in there to hide from the wind and the weather, every kind of bird you can think of. And they're not going to move, and you can almost reach out and touch them, and it's like paddling through an Audubon print to go through the mangroves because there's every color of bird. They're all in there, and it's just one of the most marvelous experiences that you can imagine.

[JB]: Oh wow. It seems like a lot of your work is bridging a lot of your hobbies: diving and (McKinney laughs) recreational fishing and (laughs), photography, could you talk more about that? Or, when you started kayak fishing and you said there weren't too many kayaks, like what time period are we talking?

[LM]: That would have been, let me see, look at when that was, 2000, about 2000, something like that. One or two in that range. I think 2000 was probably when we set up that first trail. Yeah, I'm just looking at that. Anyway, I'm sorry, yeah, I think I started, it was like around 2000, something in that range.

[JB]: And, can you talk more about your interests in fishing and diving?

[LM]: Yeah, , from a diving standpoint, I had decided in the eighth grade, , or seventh and eighth grade that, "Okay, I was going to be a marine biologist." And Jacques Cousteau, , I watched that show and said, "Okay, I'm going to have to learn to dive." If you want to be in marine biology, you've got to dive. So when I was in high school, I had a job at a refinery and made some good money, and I said, "Okay, there's no one out here that dives or anything, so I'm going to have to teach myself." So, I got a copy of New England Diver's catalogue, it had all the equipment. I read everything I could on it. I knew what I needed to buy and I bought the equipment, had, they shipped it to me. There was at least one place in a town called Midland, which is about an hour drive away, that had an air compressor for fire department use but they would fill a SCUBA tank. It was about an hour drive, not far for west Texas. There were no scuba shops, of course. So, I got my tank filled and the first thing I did was jump into a swimming pool and there and figured out how it all the gear worked, and loaded up my gear and went to a place called Balmorhea, Texas. And Balmorhea is in West Texas and there are natural springs there, and the water just comes boiling out of a cavern in the park and its sixty or ninety feet deep clear water. And so that's where I did my first dive—I had two rules. I knew two rules: one is, "Don't hold your breath and don't come up faster than your bubbles." And so that's what I did. I taught myself how to dive and that was, I guess I was, eighteen at the time. And then when I went onto college, of course, I wanted to get certified and also I took formal diving classes, but like a lot of things that I do, I go sometimes too far, just learning something is not enough, I want to be the best I can at it—as my dad used to tell me, "If you're going to do something, do it right. Do it all. Go all in." And maybe that's what I've always done on things, but I really just got involved in learning how to dive, and enjoyed it I was good at it. So, I became, eventually became an instructor, , in two different groups, NAUI [National Association of Underwater Instructors] which was the Navy version of diving and another organization PADI [Professional Association of Dive Instructors]. Then I became an instructor trainer. I started training instructors themselves, I incorporated diving into a couple of our research projects, that

is, instead of lowering grabs to the bottom from the ship to take samples, I decided we would do it by diving because the water was sixty feet deep or les, making that possible. So, we developed a whole diving research program at Texas A&M University-Galveston. So, between all of that and training people and teaching diving and, I also ran the diving program in the small college in Texas City. So, between research , dive instruction, and recreation, I have somewhere over eight thousand dives in my logbook. That seems a lot, I mean, a lot of them are ten-minute dives into a muddy bottom that you couldn't see, that I worked strictly by braille and that type of thing. So, they're not fun dives, but others were. So, that's kind of how that happened. From the fishing side, I grew up fishing and hunting, we were in West Texas. My grandfather and father, they were big time hunters and fishermen. So, I did that all my life, but particularly fishing. My dad was really interested in that and it was basically the one activity we did together that was not work-based. So, I had a background and kind of enjoyed it, but as I got into the resource protection part of Parks and Wildlife and saw how effective CCA had been, I started hanging out with a lot of those people who were really dedicated conservation-types and they fished, and so I just started fishing more and more. And it also became a nice thing for my family, for my son and wife and I. We all kind of enjoyed it and it was good time together. So, that was an activity we could do together. And so, I just kind of continued to develop it. Remember I never do things halfway. I don't know if that is good or bad but that is how I go at life. It's my kind of escape. Even today, I have a small little seventeen-foot Maverick. I used to have bigger boats. I'm now down to small boats. As you get older, you get smaller boats because they're easier to handle. I've got my kayaks, and so I'll still go fishing, with a kayak or on my boat. I don't necessarily care if I catch anything. I usually try to get out there in the morning early so I can see the sunrise and see the bay wake up and that type of thing. I will tell you one quick story, I mean, my absolute best kayak paddle ever was here in Laguna Madre. It was probably about eight years ago when we first moved down here. I wanted to go fishing in the Laguna early in the morning, and we have a house on the canal, so I got into my kayak and paddled out in the Laguna around the bend of an island. It was an August morning, very, very early, dead calm, dark, no moon. in August, we get these blooms of plankton that are bioluminescent and as you paddle, you stir up the water and they light up in a sort of, kind of phosphorescent blue sparks. And the bay at the time was full of those. So, every time I would paddle, you just see the blue sparks would go through the water, and the water was so calm as I paddled at the Laguna, it was absolutely clear dark sky, so you could see the stars, and the stars were reflecting on the water. It was completely black except for phosphorescent. So, it felt like I was paddling the middle of this giant sphere completely surrounded by stars, absolutely calm, one of the most beautiful times in my entire life. And so, it was perfect, like paddling in outer space. Only happened that one time, but it was perfect.

[JB]: Wow, that's neat. So, when you, as a resource manager, then, you have a lot of friends who are in these conservation groups and you're fishing with them and stuff. But, it's pretty clear from your stories that you're trying to harness, um, that sort of, kind of connection with the natural world for policy and that sort of thing—go ahead.

[LM]: Yeah, was a great relationship. What we would have found out when we set up the resource protection division that there were limits on what we could do. We were, as a state agency, we had a great science group in resource protection. I had all these folks in various disciplines, and we had the capability, ability to get involved in every permit that affected to

Texas environment, very powerful in one sense. We reviewed every permit of things that happened in Texas waters, but you are a state agency, so you can't be an advocate. You can't go out and advocate for something. You can, you're required, that's your job, your role in agencies is they don't allow this. It's against the law. You can provide education. You can do science and those types of things and present facts as you know them, but you can't advocate. So, the relationship that grew up over time was that the organizations like CCA, and Nature Conservancy, and Sierra Club, and all these, they didn't have the money to have a strong science program. That cost a lot of money to keep scientists on board, to keep research going, keep all that functioning. So, what happened was it became a partnership. We could do the science, and because it is a state agency and we had a lot of clout we just couldn't advocate for a certain position. We could lay out all the possibilities and give the pluses and minuses, but we couldn't say, "You need to take this one specific action." But those advocates, those individuals in the conservation and environmental organizations, they could do that. So, the partnership grew over time. We did the science. They took our science, and picked the most environmentally appropriate option and fought for it. So, it was a partnership, and so that's where my relationship grew with these folks and become friends with them. So, we work together and we live together. And it was a perfect partnership because we were all intent on trying to do something as Ed Harte used to tell us, "Make a difference." I was doing that before HRI came into existence, and that was how we combined our forces because the folks that we were typically in opposition to, they typically had a lot of resources, a lot of political clout, a lot of money to do what they wanted to do. So, it took all of us working together to balance that out.

[JB]: Um-hm. Well, what are some of the other successes you had working at Parks and Wildlife?

[LM]: Well, one of the things that I did change as I was director was one of the most difficult things that I ever did. I created the Resource Protection Division over about a ten-year period, as I said, we had one hundred and forty-four, I don't know why I remember that number, but it was one hundred forty-four members at Resource Protection Divisions of all kinds of all interests. After building the division I actually took the division apart, and it was really difficult for me because I spent ten or twelve years putting it together and the whole division I did it because we had become to effective and attracted too much attention because of our permit reviews, and I was very concerned because I was watching the politics of Texas change to become more and more conservative, less and less concerned about environmental issues, and more and more willing from a legislative standpoint and others to basically get really nasty and take, for example, just wipe out your entire program, for example, if you got too effective. I watched it happen to other agencies during sunset. So, I was concerned as the change for political climate was going forward that Resource Protection Division would become a target for different legislators to try to destroy, because we were an environmental group and they were so effective providing science for environmental groups that they knew what we did, that it would be easy for them to just defund the entire division. And I, remember, I told you the story about the Natural Heritage Program that the way I saved the Natural Heritage Program was I just changed the name, and it really worked. So, I already had a little bit of an experiment many years before that was successful. One of the things I thought was, "Okay, I could protect everybody in the division and everything they do if I hide them in plain sight in the entire agency." So I, we, took the various units of the Resource Protection and divided them into Coastal Fisheries, into Wildlife

Biology, into Parks and put them in other divisions. Now that accomplished two things. One is it hid resources, it hid all these people so that they were now pretty much safe because they were in these big divisions. But the other effect it had, and I was also purposeful, is that I came to the conclusion that we had taken the Resource Protection as far as it would go as a standalone division. I really needed to work more closely with the big powers in the agency, which was the Fisheries and Wildlife Divisions, and I really wanted to make sure those divisions took the final step moving from "hook and bullet" management to looking at ecosystem-level management. And I thought the best way to do that was to add people to their division that had that interest to basically broaden them out so that they would be part of a division. No one likes to be told from the outside what they should do but it comes from internal voices, it is better received. And so, that's what really happened. Also, I convinced the Executive Director of the Agency that I should move into becoming the Director of Coastal Fisheries Division. In that role, I think I helped move the agency more quickly from "hook and bullet" era into the ecosystem management era, and they are now well established along that road. The other thing that I did when I was, as directing the Coastal Fisheries is, I looked at how we managed fisheries in the state and we always had one rule for the entire state in that for example, we say, "Okay, the limit for spotted seatrout is ten. You can catch ten spotted seatrout in Brownsville. You can catch ten as your limit in Sabine Pass or anywhere in-between. It's the same." But the point was the fact that we knew better, and you looked at the data, is that all these areas are different. There would be healthier populations of spotted seatrout in Lower Laguna at one point and sometimes worse and wouldn't always support ten or five fish limits. So, we needed to get away from that one rule for them all. We needed to manage on a regional basis because every bay in the State of Texas is a little bit different sometimes, depending on what's happening there. One of the reasons that we didn't do that was for law enforcement purposes. Law enforcement always wants things as simple as possible, they're got a huge job that you're doing all up and down the state and if the regulations are different in different bays, it just complicates their job. So, they always advocated for as simple as possible, which I understood, but simple as possible sometimes doesn't work for biology. So, one of our biologists and I would meet with our biologists obviously on a regular basis every year to talk about what was going on in their particular region. "How was the fisheries? What did we need to do?" And I had a young scientist named Randy Blankenship, who was the Head of Fisheries in the Lower Laguna Madre, come to me and said, "Larry, I think we're going to have a hard hit on spotted seatrout. They're going to, we're going to have a huge—they're not going to sustain themselves." And he made the case really well, and we put a proposal together and, went to our commissioner and said, "We want to manage the fisheries at the Lower Laguna differently than the rest of state. We want a five fish bag limit there, and you can keep ten every place else, but we want five here. And boy did that stir the guides up, of course. The guides just came unglued. saying it's not going to be competitive for us in the Laguna if you limit me to five fish in Lower Laguna. Everyone, all the people, they'll go north so they can get ten fish." So, it was really heated. Long story short, that wasn't the case at all. Again, people just do want to catch their limits, but do not necessarily care what the limit is, so what happened is once we put the rules into place, the guides actually had a much easier life guiding in the Lower Laguna Madre. They got their limit in half the time and, they could have shorter days and all that. Long story short, now we have different rules in different parts of the state. Everyone understands that, and now it's much better for our fisheries, they are much more stable, and we can respond on a much more targeted management approach much better targeted basis.

[JB]: Um, this is really interesting. It seems like a lot of your job as a Resource Manager is, like, navigating politics (McKinney laughs). And so, I mean, what was your inspiration? Because it seems like you're making some pretty savvy decisions in terms of splitting apart the resource, , division, that sort of thing.

[LM]: So, what was your question? I mean—

[JB]: Oh, well, how did you get good at it? I mean—

[LM]: —Oh—

[JB]: —where, um, like—

[LM]: —Well, I guess, , I don't know. That's a good question. I suppose, "How did I become a bio-politician?" I guess is what it amounts to.

[JB]: Yeah.

[1:38:07]

[LM]: One, I had the longevity. Not smart, just around a long time. I had time to learn. I made plenty of mistakes to start with. I was not in that political type of thing, but I think because of my background, from West Texas. I mean, that's just—and, farming, and agriculture, and working with people in that regard, understanding business because agriculture is a tough business just like the oil business. And it is a good question because not all biologists can do this when I would give talks to universities, when I go and talk to university students about their careers in fishery biology and at TPWD, they would always come up to me either during the talk or after and ask the same question, "Okay, Dr. McKinney, I really want to be a fishery biologist. I really want to work at Parks and Wildlife, what courses should I take?" And I know they always expected me to tell them, various statistics courses and fishery courses and all that type of science course. I would tell them "You need to understand economics. You need a course in economics, sociology, psychology." And they all look at me like I was crazy, and I said, "Look, my experience in Parks and Wildlife before the commission, dealing with fish and wildlife problems, only about ten or twenty percent of the problems I deal with are actually science problems." And fishery science can be complicated, but it's pretty straight forward. It ain't rocket science, as they say. It's pretty straightforward. Eighty percent of the issues I dealt with every day are people issues, how you allocate resources between people, what are different people's ideas of conservation, and how do you affect people's lives. So, you have to be able to understand that. So, I just learned that lesson I think by hard knocks of the fact that I was able to come to an understanding of it, it was why I was a division director for as long as I was, as young as I was. I had the chance, and the Commissioners were so supportive because I recognized that need for balance in making policy. The other lesson that biologists have to learn to be in the role of a regulator and manager rather than just a scientist when dealing with commissioners. When you become a scientist, I mean, the reason you become a scientist is because you have a certain way of thinking. And it's sometimes kind of linear the way you look at things logically and there are steps in how you analyze problems, and so it's one plus one plus

one plus one equals four and that's what your data shows and that's what answer or policy should be. And so, our scientists, for example, would come to be with recommendation of how to manage fisheries or what to do regards environmental issues. They say, "Okay, Dr. McKinney, studied it, here's what the science tells me. This is what we need to do." And so, we try to put a proposal together, but what, they would not understand, of course, is those commissioners that had to approve that proposal. They were not scientists. They are attorneys, businesspeople. They have a different frame of reference, and different values. And so sometimes they would look at a recommendation and say, "No, that has a bad economic impact. Or, you are going to put an entire group of people out of business." So, they would go to a different alternative. And as my biologists, scientists had to understand that there are other ways to get to four. Two plus two can equal four. Three plus one can equal four. It's not always one plus one plus—Basically life is it's not just the science. There are other ways to get to the problem that consider other values. And some of my scientists just couldn't handle that. They just, they couldn't see that bigger picture. And sometimes I had to tell these scientists, you need to get out of this business. You need to get out of this agency. You need to go back to academia or go someplace else because you'll never be happy here. You'll constantly be upset that you can't see how there are different solutions for one problem can be correct. And so, that's part of—I don't know if you can teach that. You sometimes just have to learn it, but I mentored many young biologists in that regard, and some of them just could not do it, they just couldn't handle the fact that there are different value systems. So, that is part of what you have to learn to do is understand and appreciate that there are different solutions to problems and different ways of going at it, and you have to be comfortable enough to be flexible enough to live in that boat. And so, I guess that's part of it. Then the other, I guess, the end part of it is that, as that I used to say is, "Okay, in a fight for the environment, I feel like as an agency I always felt like I was playing poker with a pair of eights. It's not a bad hand, but it ain't a good hand. It's all in how you play it. And so, you had to play that hand pretty well. And so then if you can't play the hand out," I said, I'm sorry, but in layman's terms, "if you can't beat them, just outlast the bastards (laughs)." And so, we'd just be persistent. You might not be able to win this battle, but you want to hang around and you want to be in the game long enough to stay in the game long enough to just outlast them and to eventually make change. Win the war, even if you lose a battle or two And so, if you could do that—and so a lot of things that I dealt with over time is just, I just, it was a matter of time. I just stayed with it at a low level constant pressure rather than acute rhythm and trying to stick them in the eye, I just pushed them in the side, get my finger dug into their side until finally they move where they needed to be over time instead. So, I don't know if that means anything, but that's kind of what you learn.

[1:44:04]

[JB]: Yeah, that's a good metaphor (laughs). All right, well, let me just look at my list here of things I wanted to cover today. Well, I think we covered kind of everything that I wanted to today and then we'll leave your role at Harte for tomorrow, if that's fine.

[LM]: Okay, sure.

[JB]: I will ask, like, you talk about kind of the role of science and being a scientist and, mentoring scientists, have you seen public perceptions of science change over time and could you talk about that more?

[LM]: Yeah, and this, really, it is disturbing because I have been here in this fifty-year window of time as an active scientist over a fifty-year period, I have some perspective. One of the reasons I was able to become a scientist is because we were in that Sputnik era, a time as I was growing up, when science really took off. There was this obviously huge competition that evolved between the Soviet Union and the U.S. over science and satellites and that drove many careers in science, including mine, I guess. And so, for a, there was a period of time that when I was growing up, science was the king. It was, I mean, scientists were the most respected people, and people followed science and, obviously, we seem to have come to a time where it is almost the opposite and that is dangerous. I hope appreciation for science comes back to what it was. That has been disappointing, and a real concern as those of us in university and agencies have watched that change. We see decisions being made that are not sound, that are not sustainable, and when they fail, they always come back to you to try to fix the problem that you told them to avoid in the first place. And so, that has been a concern to see it change. I think it's not gone altogether. I think we still have a science base and it's still there. I keep thinking that, hoping, that this is just a phase we are going through, because we do go through these types of things. Everything, kind of, waxes and wanes over time. I hope that, this is an aberration that we've gone through and that we will get back to something where we understand it more broadly. But it is a concern. Part of it obviously has to do with where people get their information these days, and there's not so much respect for peer-reviewed articles and journals. People don't appreciate the art for communication. They don't understand why newspapers check their sources and all that. And so, I think we've lost some discipline, and folks that just say, "Whatever is on the internet must be true." There's part of that scientific rigor that we seem to be losing and we certainly need to get it back so people begin to think more logically. But I think we'll get there. The core is still there and I see it every day, but it could easily be lost if universities and others that keep driving on this idea that facts are real. Opinions come and go. The good thing is, facts and science remain a steady rock to come back to.

[JB]: Um-hm, well that seems like a good spot to stop so I'm going to turn off the recorder here.

[LM]: Okay, all right.

[end of interview]