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INTERVIEWEE: Jim Ray

INTERVIEWER: David Todd

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David Todd [00:00:03] Well, good morning. I am David Todd and I have the privilege of being here with Jim Ray. And with his permission, we plan on recording this interview for research and educational work, on behalf of a non-profit group called the Conservation History Association of Texas, and for a book and a website for Texas A&M University Press. And finally, for preservation and public access at an archive at the Briscoe Center for American History, which is hosted and based at the University of Texas at Austin.

David Todd [00:00:38] And I wanted to stress right now that Mr. Ray would have all rights to use the recording as he sees fit. It is his to use.

David Todd [00:00:48] So, I just want to make sure that that's okay with you, Mr. Ray.

Jim Ray [00:00:52] Yes, that's, that's very much okay.

David Todd [00:00:55] Oh, great. Okay. Well, let's get started, then.

David Todd [00:00:58] It is Wednesday, September 14th, 2022. It's about 10:20 in the morning, Central Time. As I said, my name is David Todd. I am representing the Conservation History Association of Texas and I am in Austin. We are conducting a interview with Jim Ray. This is a remote interview since he is based in the Canyon, Texas, area.

David Todd [00:01:25] A little background about him: Mr. Ray worked as a wildlife biologist for Texas Parks and Wildlife in the Playa Lakes, the High and Rolling Plains areas from 1990 through 1999, and later for a good stretch of time for the U.S. Department of Energy at the Pantex site, near Amarillo. He has also served on graduate committees at Texas Tech and at West Texas A&M University. And then in addition, he has had a long interest in purple martins and served as the interim chief wildlife biologist for the Purple Martin Conservation Association. So we'll be tapping all those pieces of his background, but especially focusing on his interest in martins today, as we discuss his work and his perspectives. And, if we're lucky and we have time, we might go into his work on Swainson's hawks, which are one of the topics of this project, and he has studied the bird, especially in regard to wind turbines and migration risks and so on.

David Todd [00:02:31] So, but back to purple martins and to Mr. Ray's life. So, Mr. Ray, would you give us an idea about your childhood and early years? I understand that you grew up in Dalhart, and maybe you can tell us if there were some people or events in your life there that influenced your interest in animals and birds and purple martins in particular?

Jim Ray [00:02:58] Yes, I was born and raised in Dalhart and we had the luxury of having a canyon that basically touched the city limits of Dalhart, and that kind of became the playground of a lot of kids that grew up there. And I had a couple of friends, Doug Howell and

Richard Steel, that like, you know, like me, they appreciated wildlife and exploring the canyon. So, we spent a lot of time out at Lake Rita Blanca in the Rita Blanca Canyon, which, by the way, is a significant tributary of the Canadian River. But, you know, typical boy stuff, we would chase horned lizards, or horny toads, as we called them, box turtles, snakes, you know, just anything we saw, we would play with it a bit and then let it go on its way.

Jim Ray [00:04:01] But I also had a, we also had a vacant lot next to my house and it's now a hospital. But back then it was just grass and some trees. But Doug Howe and I spent hours and hours of hunting horned, horned horny toads on that lot. And again, we would just play with them a little bit and then let them go. And I did have a number of friends through the years that would do that with me. But they had to be, they had to pass the test that they had no intention of harming the horny toads. That was kind of my requirement.

Jim Ray [00:04:40] But I kind of became well known for horny toad hunting. Years later, I would have people come up to me, like at my 30th high school reunion, and say something like, you know, "I remember hunting horny toads with you". Well, I guess it made an impression on them.

Jim Ray [00:05:04] I also did, oh, not a lot, but some hunting with my dad. We would hunt geese. There's a, there's a large concentration of wintering geese on Lake Rita Blanca, and they would go into the fields of corn and milo and wheat. And so we did a little hunting, did a whole lot of fishing, which also put me out in the you know, out in the environment. And we would see, of course, all kinds of wildlife. We were doing that.

Jim Ray [00:05:36] My dad was my Boy Scout troop leader. And we went on camping trips all the time, from nearby Clayton Lake in New Mexico to Wheeler Peak, the highest peak in New Mexico.

Jim Ray [00:05:52] And, you know, just anything I did, I was tuned into the wildlife. And a lot of times, the other people with me wouldn't even see them. But I was just tuned in enough to spot wildlife and we would check it out for as long as we could.

Jim Ray [00:06:11] I know in school, when we went to the library, I would always check out animal books, and to the point that some of my close friends would make fun of me. They were checking out books, you know, like Louis L'Amour or Zane Gray, some of those guys. But I would check out animal books.

Jim Ray [00:06:33] And my dad happened to be my principal. And teachers would tell my dad that in my writings I always chose Canada Geese, which were so prevalent there at Lake Rita Blanca. But they were always my topic. So I was obviously obsessed with them. And, I mean, we made a lot of trips out to the lake to see them.

Jim Ray [00:06:59] Back then was the day of CB radios, and my handle on the CB was the Canada Gander. I came up with that myself.

Jim Ray [00:07:10] And then just, you know, just daily living or walking to and from school. I probably knew every bird nest along that route, especially around the block there where I lived. And I would regularly go check them, just, you know, climb the tree, look in there and then leave them alone. But I would I would usually come back and kind of monitor them.

Jim Ray [00:07:37] In high school, the Jurajda brothers, Larry and Jimmy, and I spent a lot of time out at the lake and also a guy named Denver McMurry who also went to Tech to study wildlife. But the Jurajda brothers and I explored just about every nook and cranny of that Rita Blanca Lake area. We knew where a red fox had dens. We knew where barn owls and great horned owls were nesting in the cliff faces and just, you know, like I always did, we, we would always come back and monitor those nests.

Jim Ray [00:08:18] My minister at First Christian Church in Dalhart, his name was Cecil Beaver. He also loved wildlife. He raised racing pigeons, which I eventually did. And he had prairie dogs in his backyard that just dug holes in his backyard. And they were essentially free-ranging in his backyard. He had bull snakes in a pen. He had box turtles, like 20 of them at a time. And I would go over there quite often and look at those.

Jim Ray [00:09:01] We even got into raising gerbils. And some people may not appreciate this, but part of the reason was to keep the bull snakes fed. But yeah, I raised gerbils, and he did, too.

Jim Ray [00:09:13] So anyway, he kind of fostered that, also, my interest in animals.

Jim Ray [00:09:19] And his wife, Barbara Beaver, was my high school English teacher, probably my junior year, and she really encouraged my writing. And even in high school I had a couple of articles in the Dalhart Texan, which, at the time, Dalhart was the smallest city that had a daily newspaper, as far as Texas goes. So I had a couple of articles in The Texan, and they focused on Lake Rita Blanca, and they also focused on calling predators.

Jim Ray [00:09:59] The Jurajda brothers and I spent lots and lots of hours and evenings out on various ranches and out at the lake calling fox. And we could call red fox up to us, coyotes, raccoons. And just again, you know, that just shows that I was always tuned in to being outdoors and associating with animals. I think we only, as far as why we predator called, it was just to see them come up. I think we, I think we took one raccoon the whole time growing up. But all the other things, it was just a thrill calling them up.

David Todd [00:10:42] Sure. So tell me, how would you call up a red fox or a coyote or a raccoon?

Jim Ray [00:10:48] Well, we had a, we would do it at night. And I've since learned that daytime is just as good, but we would do it at night. We had a spotlight. And, you know, you have a predator call that sounds like a wounded rabbit. And if they haven't been called too, too much, it's pretty easy to trick them into running up to you.

Jim Ray [00:11:11] I remember one time when I worked for Texas Parks and Wildlife Department, I was with another biologist out at Rita Blanca, and I saw a gray fox in the distance and we stopped. And I called that gray fox right up to the pickup, and that other biologist had never seen anything like that.

Jim Ray [00:11:27] But yeah, that's just way the way I was and am - anything to do with wildlife.

David Todd [00:11:36] That's great.

David Todd [00:11:40] So, I think you mentioned a little bit about reading books, and I was wondering if you could go into a little bit more detail there, if there might have been, you know, particular books or films, movies, TV shows, anything like that that was kind of out in the culture that you might have attached yourself to and learned from.

Jim Ray [00:12:07] Well, some of the, as far as on TV, Mutual of Omaha's Wild Kingdom was one that I hardly ever missed. Same with Jacques Cousteau, his specials.

Jim Ray [00:12:20] And then I liked, of course, you know, I was a kid, but I liked books that, you know, told about species of wildlife, you know, through their lifecycle. There's a book called, "Wild Goose, Brother Goose". And it was, it was published in Reader's Digest also. And my grandmother had that. And I read that book over and over as a kid. Mel Ellis was the author.

Jim Ray [00:12:50] Movies like "Where the Red Fern Grows", "My Side of the Mountain", "Grizzly Adams". And my dad liked those kind of movies, too. So I remember going to the drive-in theater and watching "Grizzly Adams".

Jim Ray [00:13:07] And so, you know, again, just anything tuned in to wildlife. I liked the bird guides, identification guides. I have snake identification guides, which I would you know, even as a kid, if I saw something, I would go to those and make sure I knew what I was seeing.

David Todd [00:13:34] Well, so you talked a little bit about your childhood and, you know, your teachers and parents and minister and friends, and then about this sort of culture of books and movies and TV shows and so on. I was hoping that you might talk to us a little bit about your sort of formal education. I understand that you've, you know, gotten the education in college and then went on to graduate school to learn about being a wildlife biologist. Can you talk about that phase in your life?

Jim Ray [00:14:10] Yes, of course. Those were great days. I, I went to Texas Tech University through the Department of Range and Wildlife Management. Most biologists or to-be biologists in those days would go to Texas A&M. But a game warden at Dalhart named Calvin Tow, he told me that Tech probably had one of the fastest-growing wildlife programs in the state. And, of course, I liked that because I was, I've always been into the Texas Tech sports teams. And Tech would be my dream school.

Jim Ray [00:14:50] And, but anyway, I went to Tech. No regrets. I liked the fact that they have the range management and wildlife management, because range management is all about habitat management. And so that was a good educational background there.

Jim Ray [00:15:11] I had a little side project while I was an undergrad. Up here in the Panhandle, the deer that we had back then was mostly desert mule deer, but white-tailed deer were moving into the area due to increasing brush. Anyway, as an undergrad I worked on that with a professor and ended up writing my first, well, published article. It was in Texas Parks and Wildlife magazine, looking at white tails and muleys, mule deer here in the Panhandle.

Jim Ray [00:15:46] I ended up going to grad school at South Dakota State University in Brookings, South Dakota. I worked on waterfowl. Back then, ducks were having a tough time. Drought was part of that picture. But we looked at artificial nesting structures out in the glacial wetlands of eastern South Dakota, and I monitored the species, and the nest success of ducks and giant Canada geese on different nest structures. And this included large round hay

bales that were placed in the wetlands and then some nest baskets, culverts filled with soil and planted with grass. And these were heavily used and with great nest success. So they met their objective.

Jim Ray [00:16:42] So I got my master of science there. And it, I kind of, it set the stage there to have research as part of my, what I did for the rest of my career, in working with grad students, that culture. And I've been fortunate enough to be able to do that through my career.

David Todd [00:17:10] Well, and speaking of your career, I understand that after you got out of South Dakota State, you got a temporary position with U.S. Fish and Wildlife. And I am always curious about those first working experiences, you know, when that door opens and you start your career. I'm wondering what that first position was like.

Jim Ray [00:17:36] Yeah. And it's interesting. My, actually my first job offer was from the Sisseton Wahpeton Sioux Tribe. And as I look back, that would have been a neat position, but I ended up taking the Fish and Wildlife Service, it was a temporary job, a summer job.

Jim Ray [00:17:55] And we did a lot of nest surveys. The Fish and Wildlife Service has a lot of scattered land holdings that are called duck production areas. Again, ducks were having a difficult time back then. And so we would monitor for nests on those properties, do breeding duck counts.

Jim Ray [00:18:25] And the particular office I worked for did a lot of monitoring for wetland drainage issues. "Swampbuster" is the term I was looking for. And so they would go up in an airplane and anyway, I was involved in keeping the pictures and the files straight. That wasn't my favorite part of the job. I like to be more hands on with the wildlife.

Jim Ray [00:18:52] But I told them that, as soon as I was hired, that there was a waterfowl position back in my native Texas Panhandle, that I had interviewed for, and if I got that job, I would take it, and they understood.

Jim Ray [00:19:12] And so one day I was out doing my work in the federal pickup, and I got a call over the radio that Texas Parks and Wildlife was trying to reach me. And I actually went to a private landowner's house, that I didn't even know, and used the phone and I accepted that position.

Jim Ray [00:19:29] And so, yeah, I started in August of, let's see, August of 1990.

David Todd [00:19:39] And this disposition that you got with Parks and Wildlife, I understood that you were a migratory bird and wetlands biologist. What did that entail and where were you working?

Jim Ray [00:19:51] Yeah, and back then there were only three of those positions across the state. So I had the northwest 77 counties. Now they have waterfowl specialists, you know, three or four on the coast alone. So anyway, it was a very neat position. Only three of us, we were responsible for the various surveys that we do, the data which is used by the Central Flyway Group Management Group. And you know, it's eventually used to set regulations on waterfowl.

Jim Ray [00:20:30] But we had a mid-winter aerial waterfowl survey and a December Aerial Goose survey. And I conducted all of those for nine years. They occasionally sent me to other parts of the state to survey.

Jim Ray [00:20:48] But I also worked with private landowners, the Playa Lakes Joint Venture, which was funded by Phillips and Parks and Wildlife back then, and Phillips Petroleum, that is. And we would help, we would cost-share with landowners and do projects. And I think I, before I left for my D.O.E. position, I think I had 24 projects on the ground up here in the Panhandle area.

Jim Ray [00:21:19] Also, we had opportunity for research projects and that all kind of depended whether Parks and Wildlife had money that year for research. But I think I had the first research project in over 20 years in the Panhandle, and we looked at cavity-nesting birds, including wood ducks in our creek and river bottoms up here. And we also put up nest boxes, besides searching for natural cavities.

Jim Ray [00:21:50] And that was a great project working with Texas Tech and a grad student. And I got, I was on the grad committee, and I had another one with them on breeding shorebirds, also with Texas Tech, this time a Ph.D. Student.

Jim Ray [00:22:06] So, research was a big part of my job.

Jim Ray [00:22:09] I would go to Central Flyway meetings. In fact, there was probably, just at first anyway, there was probably just six or seven days in a month that I was even in the Panhandle, because I would be at flyway meetings that would last like nine straight days, Playa Lakes Joint Venture meetings.

Jim Ray [00:22:31] I was the Central Flyway Technical Committee's position on the Arctic Goose Joint Venture Committee, Technical Committee. So I did travel a lot. I had the privilege of going to the Arctic Circle for I believe it was nine or ten days of banding geese. And Parks and Wildlife wanted me to have that experience. And I joined the Canadian Wildlife Service on a trip up there, and we banded a lot of birds.

Jim Ray [00:23:12] So, it was a very diverse job. In fact, I still say it was, it's probably, you know, the perfect job for me.

Jim Ray [00:23:23] But, you know, it just came up, the Pantex thing just came up. I was very hesitant to put in to it because I, I didn't visualize that I would do the kind of things that I did at Parks and Wildlife. But I took the leap and, it, that worked out very well, let's say that.

David Todd [00:23:47] How big is the Pantex site? It's very large, isn't it?

Jim Ray [00:23:52] Yes, it's, uh, almost 18,000 acres, and a lot of that is grasslands. We had prairie dog colonies. But yeah, and so I worked with an agronomist to, to manage the landscape within it. So I had the wildlife layer, so to speak.

Jim Ray [00:24:15] And, but the best part of that was, and it wasn't easy, I had the opportunity to build a wildlife research program there. And you've got to remember that I actually worked for a corporation that's a subcontractor of DOE, and that corporation changed every five years. The companies changed. So, I worked for three or four different companies in my 22 years there.

Jim Ray [00:24:48] But they didn't quite understand the way agencies work with universities. So that was a slow process, you know, trying to assure them that you work with universities. Yes, there's a cost to it, but you also benefit greatly. They have the expertise and it creates opportunity for presentations and publications, which builds the credibility of the plant. And I was able to sell that.

Jim Ray [00:25:19] And we had a lot of research projects through the years which, which played a big part in us winning the 2017 Presidential Migratory Bird Stewardship Award. That was actually delayed until 2019, but the nomination was in '17. But yeah, so we won it: our work was recognized with the Presidential Award, which is pretty awesome.

David Todd [00:25:49] Yeah, that's really gratifying. Gosh, what a nice recognition.

David Todd [00:25:55] Well, you know, it's intriguing to me that, that I guess you're juggling a lot of balls between, you know, working in the Panhandle and then going up to the Arctic and working for Parks and Wildlife, but also working with universities and grad students, and then, you know, the DOE and then these corporations that are managing the land. And it's interesting that through all this, it sounds like you also had this interest in in purple martins. And I thought this might be a good chance to try to weave that into what you're telling us about your life, and maybe a place to start would be where you first saw a eastern purple martin.

Jim Ray [00:26:41] Yes. When I was a kid, once or twice a year, we, my family would go to Bartlesville, Oklahoma, which is eastern Oklahoma. And I remember swimming in their swimming pool, my aunt's swimming pool, in the backyard. And there was a martin house just across the fence on a neighbor. That was the first time I'd ever seen them. And I remember out of every cavity, every hole, babies begging and the parents coming and going. And it it fascinated me, but I didn't, you know, it really didn't set in that that's something I wanted, you know, to be part of.

Jim Ray [00:27:23] But when I went to grad school in South Dakota, I had a friend that worked at the same place that my wife did, and I was over at his house one time and he had a purple martin house and he pointed into the sky and said, "Look, there they are right now". And it must have been three or 400 feet. But I saw these birds close their wings, fold their wings, and just fall, you know, at a high rate of speed down and basically right into their cavity. And that hooked me right there.

David Todd [00:28:02] Just the, their, I guess, their acrobatics.

Jim Ray [00:28:07] Yes. Yes. They're very fascinating to watch, whether they're on their housing, or up in the sky.

David Todd [00:28:20] Well, perhaps you can tell us a little bit about the bird, maybe, you know, its life history, and its, the ecological niche that it fills.

Jim Ray [00:28:30] Sure. The purple martin is our largest swallow. It's in that swallow family. There's eight swallows that can be seen here in Texas. But it's the largest, and it feeds higher in the sky than the other swallows, and larger insects, which makes sense because it's a bigger bird.

Jim Ray [00:28:54] But east of the Rockies they're pretty much today only found in manmade, managed birdhouses. When I say managed, it's, you know, it can be a chore to keep the exotic house sparrow and European starling out of the houses. And these two birds can reduce productivity in the house. They'll throw out eggs, sometimes. They'll remove young martins so that they can nest in there.

Jim Ray [00:29:26] I know, I once saw, in my banding. I branded at over 60 sites across northwest Texas and western Oklahoma, but we had one place that had 35 pairs of martins. The homeowners there moved and left their housing to the care of the people that came in behind them. They did not do a thing as far as keeping house sparrows and starlings out, and within three years, there were no martins there. So that kind of tells you how important management is.

Jim Ray [00:30:00] But, so, the purple martin winters in the Amazon basin of Brazil and so they return to where they nested successfully the year before. To try to get the best cavity, the male, the males usually come in first, and then the females start trickling in and sometimes they pick the best cavity, so they inherit the male. It's one way to look at it.

Jim Ray [00:30:29] But yes, they have one brood a year. They usually have 4 to 6 eggs. I've seen seven eggs in a clutch. Incubation is about 15 days. The young are in the nest for about 26 to 34 days. And then for two weeks the parents assemble that brood every morning after they fledge and feed them during the day, and at night they take the brood back to the cavity.

Jim Ray [00:31:02] And here at my house I had 94, 94 pairs of martins this year. And you can imagine in the evening when all these broods are coming back about the same time, it's quite a sight.

Jim Ray [00:31:18] But after the nesting season, they'll start migration and often they'll stop for a day or two at some, at some big migratory roost, which can have hundreds of thousands of birds roost overnight in one or two trees and sometimes it's in the heart of the city. You wonder why they pick those locations. Probably has a lot to do with safety. And also there's a theory that the heat island of the city may play a role in that, you know why they picked this particular spot.

David Todd [00:32:06] Well, what do you mean by that? What would that do for the martin that might benefit them?

Jim Ray [00:32:13] You know, I'm not sure what it would do for them because it's not hot enough, for example, to make parasites fall off. But it's just been noted that, this, in South America, they'll sometimes roost on refineries that are hot. Wetlands can be warmer, you know, near the surface of the wetlands. They'll roost sometimes in cattails, but, and then in the city, same thing, right in the heart of the city. It's always a few degrees warmer than, you know, outside the city or outside the wetland. That's just an observation, I guess. There's not, there's not a real good explanation yet.

Jim Ray [00:33:02] And anyway, then they continue on their journey. And we have found with some of the technology we're using in our research, that the Yucatan Peninsula is a very important stopping point. They will stop for a couple of weeks there. And then they kind of meander on down to South America.

David Todd [00:33:26] So, they have a really long migratory route.

Jim Ray [00:33:30] They really do. Yes. And you know, the birds up in, the northern end of the range is actually in Alberta. And so those birds, you know, thousands of miles. And, particularly in the spring, they make that flight fairly quick, like a week to ten days. In the fall, it's more leisurely trip. They'll take three or four weeks.

David Todd [00:34:01] And I understand that you've done a good deal of banding on these birds and have studied their migrations. Maybe you could tell us a little bit more about what you've learned about their route and their navigation and, you know, their fidelity to a nest box.

Jim Ray [00:34:24] Yes. I started my banding program in 1997 and I justified it by ... we are out here at Amarillo, we are on the western periphery of the eastern purple martin's range. No, no information, you know, on birds out here. So I started banding and just, you know, as I worked for Parks and Wildlife and was around the region, I kept an eye out for martin houses. And eventually, you know, had a pretty good map of where purple martins were distributed. And so those became my banding sites.

Jim Ray [00:35:05] And when I went to Pantex, I had a coworker that would help me band. But they noticed that every summer, you know, I was gone for a week or two. And what I was doing was out banding. Well, this coworker talked management into, hey, you ought to see these banding outings and how the landowners and neighbors come to watch. We do some public places and people come.

Jim Ray [00:35:35] Anyway, it's a great outreach program. And the federal government is very serious about migratory birds. There's actually a presidential order to protect migratory birds, and I really used that during my time at Pantex, because research collaborations and, you know, just doing good things for migratory birds, are all encouraged by that presidential order. And so that's how I justified a lot of my research. And it certainly got Pantex to support our banding. And so 66 colonies.

Jim Ray [00:36:15] So the one thing that we learned and this was before we went into some of the GPS and geolocator tracking devices that I'll talk about in a minute. But with our banding and then looking at birds through spotting scopes around the region, you know, we found that, which is really not a surprise, but the young martins, when they come back the next year for their first breeding summer, they will come back within a 20- to 30-mile radius of where they were born.

Jim Ray [00:36:50] Most of them will not nest where they were hatched. And this is just a, you know, a natural way to prevent inbreeding and those kind of things. So we kind of learned that, how far they may disperse. We had some disperse as far as Liberal, Kansas, and I think I had one bird that nested in Nebraska. But most of them are right in that area that they were raised.

Jim Ray [00:37:20] Then I heard of a collaboration that was led by the University of Manitoba, and they were deploying geolocator data loggers, which is part of a backpack that you set on the martin's back and you actually tie loops around the legs and that holds the device on their back. But I contacted them and mentioned my banding program and I said, "Hey, if Pantex will purchase those transmitters, could we be a study site?"

Jim Ray [00:37:58] And I thought it was very important because the closest study sites to us were like Alberta, Minnesota and Florida. In other words, this whole western part of the range, at least in the south, was not covered in these studies.

Jim Ray [00:38:18] So, for four or five years, we did the geolocators. And what they do is measure sunrise and sunset. One of those tells you the latitude. One of them will tell you the longitude. And this was kind of groundbreaking technology. For the first time, we could see birds, you know, where birds traveled to, how long they stayed in places and those kind of things.

Jim Ray [00:38:48] You have to get the unit back. So the next year when they come back, you know, I would collect the backpacks when I saw them.

Jim Ray [00:38:57] And so then University of Manitoba researcher, Dr. Kevin Fraser, would, you know, do all the computer work and produce the maps. And, you know, that's where we first learned about their paths and how long they stay at some of these roosts, how important the Yucatan is, and where the roosts were in the, down in the Amazon.

Jim Ray [00:39:23] One thing we found that was interesting: you look at the roosts from east to west, across the Amazon, you'll have birds from all the breeding locations, scattered from east to west. It's not like the eastern colonies end up in the eastern Amazon. They'll be even in the western. So each roost will have, when you look at our study sites, will have birds from those study sites. So we don't put all of our eggs in one basket is basically what I'm getting to there.

Jim Ray [00:40:03] But those geolocators have accuracy of about 30 kilometers, so they're not real exact. But they're good enough, you know, to show us those pathways and times.

Jim Ray [00:40:16] And when GPS got small enough to put on the martins, we went to them. And they have accuracy of about nine meters so we can actually get right to the roost tree.

David Todd [00:40:32] That's extraordinary. And so these, when you went to that, sort of, next level of precision and accuracy with the GPS, what new things could you learn that maybe the geolocators weren't able to tell you?

Jim Ray [00:40:47] Well, the GPS and at first there was only like 15 locations you could, they would take. So that was very limiting. But now they have it where you can get hundreds of locations.

Jim Ray [00:41:00] We learned, you know, exactly where roosts were, and then pair that with other data, you know, determine the risk of the roosts to human disturbance, characterize routes. We just learned all about what they need in terms of roosts.

Jim Ray [00:41:22] And this is very important now because of all the burning of forest and other, you know, impacts by man down there. In a declining species like the purple martin, you need to know that.

Jim Ray [00:41:38] [Well, here goes the dachsunds.]

David Todd [00:41:40] [All right.]

Jim Ray [00:41:44] [Sorry about that.]

David Todd [00:41:46] [That's okay. That's okay. You tell me when you'd like to resume, and we can.]

Jim Ray [00:41:50] [Okay.]

David Todd [00:41:51] [We can certainly do that.]

David Todd [00:41:54] Well, so one thing I wanted to follow up with you about is, is what these GPS locators, these detectors that they were carrying, could tell you about the changes in the Amazon basin. It seems like you've got one goal to understand more about the bird, but it sounds like this was kind of a case of the canary in the coal mine that, you know, maybe this martin data was also telling you a little bit about what's going on in the rainforests of the Amazon basin. Is that right?

Jim Ray [00:42:35] Well, it's more about the potential that could impact them. We haven't exactly found issues, you know, that could be leading to the decline of the species.

Jim Ray [00:42:52] All aerial insectivores are decreasing. So there's something.

Jim Ray [00:42:57] But we feel that the work we're doing with the martins, you know, you need to look at the year-round impacts, at the time that they're down there.

Jim Ray [00:43:06] But locating roosts, you know, exactly where they are, is an important part of that.

Jim Ray [00:43:14] We've used other data sources out there to look at habitat quality - you know, what kind of site would they choose for roosting, and what kind of areas do they go to during the day to meet their nutritional needs. And in fact, we have a paper about to come out on that very thing.

Jim Ray [00:43:40] And but yeah, I mean, none, none of this was known before this technology.

Jim Ray [00:43:45] And I do know that some of that work is funded by Disney. I didn't realize how much work they did down in South America, but Disney has actually taken some of the other collaborators down to the Amazon, and they're working with the local people there at several roosts, educating them because if they're around people, you can imagine three or 400,000 birds in one or two trees make a big mess.

Jim Ray [00:44:16] And in fact, I've, yeah, I've had to intervene in situations. There's a roost in Oklahoma City that was right over the Oklahoma bombing memorial. And they didn't like all those birds right there, kind of understandable there. But anyway, so they can be viewed as a nuisance, and then, you know, people could cut down the roost trees or whatever and possibly make an impact.

David Todd [00:44:45] I see. Okay.

David Todd [00:44:46] Well, you know, before we go too much further, I think this might be a chance to just explore a little bit about the population and range of the bird, and how it's

changed over the years, you know, whether you're learning about it through your banding, or your geolocator work, or the GPS work or, you know, from other sources. What sort of trends do you see?

Jim Ray [00:45:14] Well, they monitor birds through the Breeding Bird survey, which started in 1966. And the martin, and other aerial insectivores, have pretty much been in a steady decline.

Jim Ray [00:45:32] Now, one thing I wonder about is in the '60s is when a purple martin house manufacturer started advertising that they eat, you know, 2000 mosquitoes a day, which is not true. They generally focus on higher flying and larger insects than mosquitoes. But anyway, that sold martin houses.

Jim Ray [00:45:55] So, you know, did that have an effect on increasing martins in the '60s? Have they really declined that much? I feel they have, but there's at least that question. But when martin houses started coming out in the '60s, and they were very popular housing, and people purchased them. But no doubt that allowed martins to spread to the West some, for example, from central Oklahoma to, through my area.

Jim Ray [00:46:32] And, you know, they may have been out this far west in some of the river bottoms where there were trees and cavities, maybe nooks and crannies in cliff faces. But we don't know that. I do have a record from about 1910 of a pair of martins in a tree cavity by Boise City, Oklahoma. So, you know, there were at least some breeding martins before martin houses but they were probably very limited to where there were trees, which, there's not many except on the creek and river bottoms.

Jim Ray [00:47:13] Overall, I really, I mean, even though we wrote a paper on some new locations in eastern New Mexico, which extended the line out a little bit here in my area of the southern Great Plains. But, you know, if you look at the range from Alberta straight down to the eastern part of the Trans Pecos, you know, that's been the range of these eastern purple martins pretty much at least, you know, in modern times when they've been tracked and martin houses have been available.

David Todd [00:47:55] Well, you mentioned modern times, and it's interesting to me that the little I know about martins is that they seem to have been dependent on artificial nest houses, structures of some kind, for generations and really even before Western settlement. Is that right?

Jim Ray [00:48:19] Yes. When our earliest when the earliest Europeans arrived, they found that southeastern tribes were, they were already hosting purple martins in their villages in hollowed-out gourds. And I read a paper where, and I didn't even know, that these big gourds were Old World. But I think it's like 10,000 years ago is where they've tracked some of the, traced some of the earliest gourds to arriving in North America. You know, did they come across the Bering Strait or did they float across? It's not really known.

Jim Ray [00:49:00] But this practice of erecting gourds for purple martins, it could go back, you know, thousands of years. And so people ask, "Well, why did the Native Americans want them in their villages?" Well, they could have recognized the, you know, the insect control. You could just imagine drying meat out in the open air: flies were probably a problem. So they might have just appreciated the martin for that.

Jim Ray [00:49:31] But also, like when strangers come onto my lot, my martins react differently than when I'm out there. And so, they could have been a warning system for raids by other tribes or maybe large predators. So, you know, either one of those could be the case.

Jim Ray [00:49:56] But once the early Europeans arrived, martins rapidly took to their, nesting in nooks and crannies in their buildings and structures and actually got quite, quite common.

Jim Ray [00:50:15] But, you know, when the European starling and the house sparrow arrived (and I don't have those dates right in front of me), but the starling was released in Central Park by a man that wanted, he wanted to see every bird that was in his native area in Europe, he wanted to see them in the U.S. And usually they were birds that were mentioned by Shakespeare. There's a connection to the Shakespeare writings. And so that's how the starling got here.

Jim Ray [00:50:54] House sparrows were brought over for other reasons. But they quickly competed with native cavity nesters. And by 1900, most martins were nesting in managed bird housing versus in buildings or anything like that.

Jim Ray [00:51:17] But the purple martin is very adaptable. They, I have seen them, you know, in broken street lights on occasion. It's very rare. I can't stress enough how rare it is to find them like this. But I went down to the eastern part of the Trans Pecos and found them nesting at a swimming pool underneath the canopy of a picnic table, not in a cavity, but on a shelf underneath there, which gives them a competitive advantage over house sparrows and starlings.

Jim Ray [00:51:57] But these kinds of nesting in manmade structures, other than birdhouses, are usually short-lived. We tend to want to repair things that are broken and sometimes they just don't want birds nesting in situations like that because of the mess, real or perceived mess.

Jim Ray [00:52:22] But yeah, today they're pretty much in birdhouses. I can report a study that I'm involved with that involves Texas Tech and Mississippi State, where martin houses have been put in working forests, in clear cuts, to see if we can lure the martin back into the woods, basically. And I can report that in the first year of that study, martins occupied some of those gourd racks. And so the objective is to keep moving them closer and closer to mature forests that would have cavities and see if they might, some of them might revert back.

David Todd [00:53:12] That's fascinating. So they might be able to change their behavior, even if it's been something that they've really gotten practiced in over generations, you know, decades.

David Todd [00:53:26] Well, tell us a little bit more about these artificial shelters that they seem to largely rely on. How those evolved over the, you know, past, say, 60 years. It sounds like these aluminum nest houses were introduced, what, early '60s or so?

Jim Ray [00:53:50] Yes.

David Todd [00:53:51] Yeah. And I'd be really curious to hear your view about how those have evolved. It sounds like purple martin landlords are notorious tinkerers and they've really done a lot of fine tuning to make these shelters work well for martins.

Jim Ray [00:54:11] Yeah. And a good example of that is, it became recognized that larger cavities, you know, were safer, were more attractive. And if I have seven-egg clutches, they're in the bigger cavities, like, like a gourd laid horizontal and the end cut out for the entrance hole. So a bigger cavity can result in bigger clutches.

Jim Ray [00:54:40] The starling-resistant entrance hole was developed through time, and can, almost completely, you know, ward off that problem. I have found that if a male starling can't get in, usually he'll get a female that can get in there. But so, you know, it's not absolute.

Jim Ray [00:55:05] Doubling the size of the compartments of these aluminum houses is pretty common for reasons that I, that I just mentioned. But yes, purple martin landlords are very, very dedicated to keeping their martins safe and in the best situation that they can.

Jim Ray [00:55:28] And here, here's the worry. We already have a decline in in the species. And I can mention the kind of areas that are really in decline. But one thing that could be a serious issue is most purple martin landlords are retired people. We need to get the youth involved. And so far, that's proving to be kind of kind of difficult. I don't know if it's they're too busy or what. But when we already have a decline, and if you lose a whole generation of landlords, that is a big issue. And that's something we've got to we got to work on.

David Todd [00:56:19] Yeah, I can understand that. It's interesting how there's this sort of interrelationship between the martin and people, not just people in general, but a particular generation of people who had that habit or had that time to devote to being a landlord.

Jim Ray [00:56:40] Yeah. And also, you know, younger people may be opposed to controlling house sparrows and starlings. And I'm talking lethal control there, because sometimes that's what it takes. You can tear out nests all day long. And I've never seen a house sparrow go away because of that. You know, so lethal control, the older generation has been, has been doing that. The younger generation may be less, less likely to want to do that.

David Todd [00:57:14] Yeah. And I gather these martins not only have competition with the starlings and the sparrows, but I've read that they also have to contend with predation from Cooper's hawks and owls and ratsnakes and raccoons. And I'd be curious to hear, you know, what sort of strategies landlords take against these other rivals and predators.

Jim Ray [00:57:46] Yes. And I've had that issue.

Jim Ray [00:57:48] [Oh, there goes my dogs. What's happening is my yard guys have showed up and they're spraying.].

David Todd [00:57:59] [Oh, that's okay. They're like your martins. They're just alerting you to strangers.].

Jim Ray [00:58:11] [Yes. Yes. Marshall! I think they're finishing up, so.].

David Todd [00:58:17] [Okay. All right.]

Jim Ray [00:58:21] [Yes, their names are Marshall and Lily. You know, from the TV show?].

David Todd [00:58:25] [Yes. Yeah. You have celebrities living in your house.]

Jim Ray [00:58:29]]Yeah. Well, I did have a magazine article about her litter of puppies.].

David Todd [00:58:37] [Oh. Very nice. Very nice.].

Jim Ray [00:58:40] [Marshall. Okay. I think the yard people have left, so hopefully he's through.].

David Todd [00:58:45] [Okay, fair enough.].

Jim Ray [00:58:48] Do you want me to just start off where I was?

David Todd [00:58:50] Well, yes, just curious, you talked a little bit about the challenges of starlings and sparrows for purple martins. But I thought this might be a good chance to hear your thoughts about how to face up to the threats from Cooper's hawks and owls and ratsnakes and raccoons and, you know, native, native creatures. But nevertheless, you know, probably serious risks.

Jim Ray [00:59:13] Yeah. Yes. So are we on?

David Todd [00:59:19] Yes, go ahead, please.

Jim Ray [00:59:20] Okay. Yeah, I've had to deal with sharp-shinned hawks, so I know what people are talking about. Sharp-shins and Cooper's hawks can - they're just deadly predators and they find a martin house kind of like a bird feeder. It's a concentrated food source, and they can wreak havoc. And the one way that you can prevent that is make sure your housing is in an open setting where they have plenty of room to see that hawk approaching, because they, the sharp-shins and the Coopers will use fences, houses, other structures, kind of as a blind as they cruise in, very low to the ground. So open setting helps.

Jim Ray [01:00:11] If they're actually hitting the houses, and great horned owls are bad about this. There are ways to erect bird-of-prey guards, basically, you know, bars or something like that. That is from front, tip of the porch to the one above it. And that, all that does is creates a longer reach for a bird of prey.

Jim Ray [01:00:42] Snakes. Yeah. If you're in the range of the black ratsnake, and here in Texas, we have the Texas ratsnake, which is in that black ratsnake species. But they are amazing climbers. They can climb a martin pole without even wrapping around it. They have specialized scales. They can go right up a steel post, straight up. It's, it's amazing. So if you're in that range, which almost all of Texas is, except maybe the Western third, you definitely need a snake guard on your, on your poles.

Jim Ray [01:01:21] And big enough also to deter raccoons, which I've never had a problem with out here, but they can be a problem. So, yes, there are ways. To address those.

David Todd [01:01:40] Now, is it true that there's maybe some predation by great-tailed grackles? Have you looked at that?

Jim Ray [01:01:51] Yes. And I actually have a paper or two on that. A great-tailed grackles have spread. I think back in the '50s, they were only within 150 miles of the coastline of Texas.

They've spread through the state due to all these towns having maturing trees. And also agriculture provides food source.

Jim Ray [01:02:15] But I've had a situation where grackles nested, you know, a mere 20 or 30 feet from the martin housing. But when the nestlings take their first flight, they could recognize that, and they would knock them to the ground and predate them. I have observed here at my house winter weather stressed purple martins that are on the ground trying to soak up heat from the roadway or the ground. I have noticed grackles flying in and trying to knock the adults down, but I've never seen them get one. So yes, they are potential predators, particularly at the time when the martins are weak or when the nestlings are fledging.

David Todd [01:03:11] That's fascinating. Well, you know, you mentioned the effect of of winter stress on purple martins. And this might be a chance to talk a little bit about that, both, you know, what sort of climate extremes you're seeing and what their impact might be on these birds. But whether it's, you know, extreme cold or extreme drought and heat, but also, you know, what landlords can do to manage those kind of climate risks?

Jim Ray [01:03:46] Well, it's very difficult. Purple martins eat the larger insects and like there's a 48 (this is anecdotal), but when I've seen 48 degree, or less, highs last three or four days, you can start losing your martins. You'll see barn swallows out feeding, but they can they can feed on smaller insects, which might be available, you know, under those temperatures. But the martin - 3 to 4 days.

Jim Ray [01:04:19] People have, you know, purchased crickets, froze them. And then thawed them out, and with the use of a spoon, launched them into the air. And you can train your martins to get those. I've saved martins that way. I actually trained mine to an elevated feeder, when they get weather stress. They will not touch the crickets unless they are two or three days into one of these cold spells.

Jim Ray [01:04:51] But yes, I've seen I've seen spells where we've lost all of our young. We had two of those this year. Actually, all my martins had to start over, re-lay. But I've also seen entire colonies the adults perish. And a lot of time that's the early cold spell, the early, early males that have already come in. When we get a snow event that lasts three or four days. A couple of times in May, it didn't quite get down to that 48-degree threshold, but it was misty and rainy for three or four days, you know, the same effect. And we lost, we lost some adults and all the young that were there at that time.

Jim Ray [01:05:40] Some of the declines in the purple mountain population, they were first noticed in the northeast. And a lot of that was weather-related. You know, up there, there's a greater chance of a cold spell occurring. And also an early hurricane in the New England area wiped out martins, and that did not recover. It took years for that to recover. May not even be, you know, like it was even yet.

Jim Ray [01:06:11] We're now seeing declines along the Gulf Coast, extending into Texas, kind of that area around between the Piney Woods and the Edwards Plateau, and then extending up through the Rolling Plains, a little more severe declines than the rest of the range.

Jim Ray [01:06:35] But don't know really the cause of declines along the coast and versus, you know, the areas that we know cold fronts or hurricanes occurred causing problems.

David Todd [01:06:48] And the issue with the hurricane, is it just the extreme winds or is it that the rain washes out the insects. Or what do you think's at play there?

Jim Ray [01:06:59] Just prolonged rain, you know, over the course of two or three days, probably went into four days. But yeah, the lingering rain, and certainly the high winds probably factored into that, too. I know my martins seem to be able to get food in the highest winds that we can offer here in the Panhandle. But it takes colder temperatures or prolonged moisture, you know, to really cause problems with adults down here, I believe.

Jim Ray [01:07:36] Now, the drought - drought is another thing. And we saw that this year. The birds are just light. And the cold spell that I mentioned that really didn't get down to that 48-degree threshold and we lost ended up losing some, I think a lot of that was because the birds were drought-stressed already, you know, from a nutrition standpoint.

David Todd [01:08:00] So a lot of this stress is not so much on the birds themselves, but it's the effect that it has on the, their food sources, on the insects that they prey on. Is that true?

Jim Ray [01:08:13] Well, that's correct. But causing you know, the birds, the birds are light in weight. So, so, yes, it's a nutrition, amount of food issue caused by the drought.

David Todd [01:08:29] Yes, I see. You know, I was, speaking of feeding, I noticed that you had tracked a a moth invasion back in 2012 and had seen that it had an effect on the martin population. Can you tell a little bit about that?

Jim Ray [01:08:50] Yeah, and that was amazing. Literally, in the evening, it looked like it was snowing up here for a day or two. But just more, many of these moths were around for several weeks. And I think, I think they were like armyworm moths. Anyway, they came from the West, versus being raised here, but it literally was like snow. And in the evenings there was an hour or two of overlap where the martins just gorged and fed their young. And yeah, I believe it helped them tremendously.

David Todd [01:09:37] That's interesting. You know, speaking of the martin feeding, and their relishing these moths. I've read in kind of scattered places about general declines in insect populations and that that may be a issue for not just purple martins, but insectivores of all species. Is that something that that you have been following or concerned about?

Jim Ray [01:10:12] Yes, absolutely. And I work a lot with University of Oklahoma's Aeroecology Group, which studies biota in the air. In fact, I had a monarch project with them when I was with Pantex. We worked on pollinators, too. But they, that technology of using radar has shown that insects in the atmosphere have declined. And every once in a while I'll have people tell me, "Hey, have you noticed these days when you make a trip in your vehicle, you don't have to clean your windshield every hour or two?" And I certainly remember, not too many years ago, that very situation where you're in, there are so many insects in the air and splatter on your windshield, you don't see that very often anymore. And I think that's some proof there.

Jim Ray [01:11:08] University of Oklahoma had a kind of neat study a few years ago focused on fire ants. And the reason - you'll see why I'm mentioning this - but, you know, they used radar, and they tracked martins and they watched at the housing what kind of food was being brought in. But at the time, when fire ant queens go into the air for mating, the martins just absolutely gorge on these queens and drones. And some of the birds that are the aerial

insectivores within the range of the fire ant are not suffering the same declines as the rest of the range. They're declining somewhat. But in other words, the fire ant abundance is being a supplemental food for them. We don't particularly like fire ants, but that's just, that's just kind of further proof that, you know, insects are declining except in the range of the fire ant, there's enough that those birds are faring better. Very interesting.

David Todd [01:12:22] Yeah. That's. It seems ironic. I had the chance to talk to biologists, and they usually decry the red imported fire ants and this terrible impact that it's had on all kinds of wildlife. But it sounds like in this case, maybe they're benefiting the martin. Is that fair to say?

Jim Ray [01:12:42] Yes. And other swallows and probably other aerial insectivores.

David Todd [01:12:46] Huh!

Jim Ray [01:12:47] Somewhat. They're benefiting them somewhat. Yes.

David Todd [01:12:50] I see. Okay. Well, thanks for explaining that.

David Todd [01:12:55] So, I think it's interesting that you've worn many hats in your career. And one of them has been to serve the Purple Barton Conservation Association as its lead biologist and then also to be on its management board. And I think it's a fascinating non-profit, that they've really zeroed in on the purple martin and trying to protect it and encourage others who are interested in the bird to help out as well. Can you talk a little bit about the Association and the role you see it playing and your part in that group?

Jim Ray [01:13:36] Yes. It is a great organization and I've been a member, I think, as long as it's been in existence. But they contribute to research. But more importantly, you know, they put out their quarterly magazine, which is very beneficial to the purple martin landlord or someone that wants to get into purple martins. And so the education and outreach part of it is great.

Jim Ray [01:14:08] We just had a purple martin conference, a virtual one, here a few weeks ago, and where all the research that they, that they support has been featured, including some that I'm involved with Texas Tech and Mississippi State. You know, so it's just a good outlet for information. No doubt very beneficial to what's coming up. We need to get the youth involved, and so they recognize that.

Jim Ray [01:14:43] But yeah, I was invited to be on the management board and I was on that for about three years, and led their research committee and was asked to step in, interim, until they, you know, were able to hire another biologist to fill that role because I still had my full-time job with Pantex. So, you know, it wasn't the best of situations. But yes, I enjoyed that. And it's a good organization.

David Todd [01:15:18] Okay. Well, and you mentioned that you were doing the PMCA work while you also had this position at Pantex. And I thought it was intriguing that you've had work with a state agency like Texas Parks and Wildlife, and then also with a federal agency, you know, underneath these contractors, the US DOE, and, you know, one agency, certainly the Texas Parks Wildlife, and Fish and Wildlife, had a focus on wildlife conservation, while the DOE and the contractors who work there had a more mixed mandate with national security, of course, being way up there, but also habitat management. How do you see your role as a

wildlife biologist in, you know, all those different kind of contexts? That's pretty unusual, I would think.

Jim Ray [01:16:24] Yeah, it is unusual. I've always had a managers, supervisors, that were enabling. And what I mean by that is, you know, allowed me to build or run a program and enable, not throw roadblocks. You know what I mean? And yeah, I had, you know, working for Pantex, like you say, the mandate is not really there. I was fortunate for many years being able to convince managers and the funding people and eventually built the program. And anyway, I've recently retired and I'm not sure if they're going to continue on with a lot of that stuff. I really don't think they are. But, you know, I know they'll continue to be wildlife-friendly on their property.

David Todd [01:17:31] You know, something else that I noticed about your work and career, that's really interesting is that you bring this, you know, high level of technical training and experience to places where it's maybe not, you know, mirrored in the people you're around, whether it's at DOE, where, you know, the folks there are probably not as focused on the biology of the site, or if you're at the PMCA and you're dealing with folks who care passionately about these birds, but they don't have the same kind of science education and years of experience. I was just wondering how you explain what you're trying to do to the folks that may be coming from a different spot.

Jim Ray [01:18:32] Well, you know, from the start, whether it be landowners I'm working with, or I don't know, I just, I just have developed that way. And being a Panhandle native, you know, I can relate to the landowners. I really can't, really can't explain that one.

David Todd [01:18:59] Right. Well, you know, maybe it's just a, more of a personality trait, you know, the ability to sort of translate and interpret so that, you know, a purple martin landlord or a private landowner, you know, would understand what you're trying to help them with.

Jim Ray [01:19:18] I think that's right. It has to be a personality trait. But experience in there, too, you know.

David Todd [01:19:29] Well, we've talked mostly about purple martins, but I know you've worked on many species of animals, from the horny toads as a child and the gerbils and so on. Now, one of the species I've just been really intrigued by is the Swainson's hawk, and I was really intrigued to see that you had done some work on them and their really extraordinary migration and, you know, the effects of these wind turbines. And I understand there was an insecticide issue that affected them in past years. And I was hoping that you could maybe outline some of the issues facing that bird.

Jim Ray [01:20:18] Okay. And, you know, with the Swainson's hawk project, I want to give a lot of credit to Dr. Clint Boal at Texas Tech. He is one of the leading bird of prey researchers in the country, probably the leading. So, you know, I collaborate with him and all that. But, and we've had grad students working on the project, but wind energy didn't really show to be a big risk with this study. There's potential, though, and I'll give you an example.

Jim Ray [01:20:53] All of our birds went through one mountain pass there in Central America, and it, wind energy development is occurring there. And we believe the whole North American population of Swainson's hawks travel that same path because all of ours were, you could lay down their migration tracks, and the whole way they're on top of each other. So

when you get a whole population going through a spot like that mountain pass with wind energy development. The potential is there.

Jim Ray [01:21:28] The main risk is, during migration, is where they might roost, because when they're migrating, they're high, it's, you know, they're not coming down much during the day. So, you know, so most of the risk is associated with where they're going to come down at night, for the night.

Jim Ray [01:21:51] What's the.. I'm going to stop. I'm kind of lost right there.

David Todd [01:21:58] No. So, this is interesting. So, it sounds like there's a chokepoint down there in Central America where these migrating Swainson's hawks pass through and, you know, run the gauntlet of these wind turbines that are being built and developed, but it depends on what height they're at. Is that right?

Jim Ray [01:22:22] Yes. What height? But you know, what's the quality of the habitat where they are? Is a hawk going to come down to, you know, grab a grasshopper or whatever? So, you know, there's a lot of factors in there.

David Todd [01:22:37] I see.

Jim Ray [01:22:38] Density, numbers of them, certainly increases the risk. As far as the Swainson's hawk population that I work with, there's a, there's another issue. Swainson's hawks are very abundant here in the Texas High Plains, but almost every roadside tree or group of trees, or every homestead has elm trees that were planted here long ago. An exotic tree. That's where these Swainsons nest. They're not getting replaced. You know, there's less people living out in the country. The roadside trees aren't necessarily being replaced. So it's kind of like the martin thing - losing a generation. We're getting ready to lose a generation of trees.

Jim Ray [01:23:34] And probably, historically, the Swainson's hawk nested, you know, off the High Plains, in the Rolling Plains, where there were occasional trees. They may have nested on cliff faces of the Caprock and Palo Duro Canyon.

Jim Ray [01:23:49] So they're getting ready to be impacted big time just because of the loss of these elm trees that are all of similar age, you know. And you see a lot of them dying each year because of drought, combination of droughts and age.

David Todd [01:24:08] That is something that did not come up on my radar at all. That's fascinating. So, there was an era when people lived in the country, they planted these elm trees. But those folks aren't living there. They're not replacing them as they die off. And they're dying off at a faster rate because of drought.

Jim Ray [01:24:28] Right.

David Todd [01:24:29] Hmm.

Jim Ray [01:24:30] Yeah. They're not getting the care anymore - supplemental water or whatever. You know, there's other issues on roadsides where they you know, the highway department may be spraying for weeds. You know, you get drift on trees enough times, you start having issues with their survival.

David Todd [01:24:52] Gosh. Well, and it's interesting, too, that these birds are so adaptable and they recognize these elms that have been planted and started using them quickly. But you wonder if they can modify their behavior once again as those trees go away.

Jim Ray [01:25:13] Right. And I'm in a neighborhood between Emerald and Canyon that had, my neighborhood, you have one and a half acres. So the houses are, you know, they're not real close together. But we have a pair of hawks that are in a big elm tree here in the neighborhood. So they are somewhat adaptable.

Jim Ray [01:25:32] But I also noted, noticed, when we were doing our bobcat research where we had set a trap near a Swainson's nest, they abandoned the nest. So, you know, they can be bothered enough to abandon the nest. So we've seen that. Yeah.

David Todd [01:25:57] I see. Now, this is a long way away, but that maybe still you perhaps caught wind of and saw the effects: I had been reading that down in in South America, they had an issue with insects in sunflower fields and they were using a pesticide. I think it's called monocrotophos. I'm probably not saying that right.

Jim Ray [01:26:26] It's close. Yeah.

David Todd [01:26:28] And that the Swainson's hawks, I guess this got into their food chain and contaminated them. There was a pretty big die-off. Can you fill in any of that story for us?

Jim Ray [01:26:41] Well, I'm probably right where you are on that. You know, I remember this happening. I do know none of our hawks, you know, were involved in something like that. Most of our hawks that went down there were able to migrate back. So I don't know if that's still ongoing, or if they have made changes. I suspect they've made changes down there and have slowed that down, or we would be hearing more about it in recent years.

David Todd [01:27:14] I see. Okay. Well, that's always a welcome thing to hear.

David Todd [01:27:20] So, we've covered a lot of ground here. And this has been really helpful. And I think we probably ought to try to draw to a close here, so you can go on with your day. But I did want to just open it up with a question here at the end if there might be something that we should have talked about with regard to purple martins that we didn't, that I just overlooked it. And I was hoping that this might give you a chance to say, "Oh, yeah, there's that other thing I should have mentioned." Is there anything like that that you would like to add?

Jim Ray [01:27:57] Not to add, reiterate, I guess. You know, the future of the martin, I think, is going to rely on us getting the younger generations interested in installing and willing to manage martin housing. That's, in my banning program, and I had a little publication on this, but something like 80% of my purple martin landlords were over the age of 50. I mean, you know, we got, we got to work on that.

Jim Ray [01:28:33] I'll also mention, you know, besides the species we've talked about, I've had the pleasure of working on a wide variety of animals. I think sometimes I don't want to really be remembered as, you know, just the purple martin guy, or even a bird guy.

Jim Ray [01:28:58] A lot of my career has been, you know, short grass prairie, riparian zones, you know, the whole ecology, the whole ecology thing.

Jim Ray [01:29:12] West Texas A&M and I studied prairie rattlesnakes and horned lizards for a decade, that included radio tracking rattlesnakes, which are one of the most interesting projects I've been on.

Jim Ray [01:29:26] Ten years of tracking and looking at bobcats here in the high plains. Very fascinating stuff there.

Jim Ray [01:29:38] Macroinvertebrates, prairie dog communities. In fact, as soon as I got to Pantex - this is the first project that I had to, you know, convince them to fund. We looked at prairie dog ecology and what other animals use their, you know, use their prairie dog colonies. And that was like some of the first research on prairie dogs in this whole southern Great Plains.

Jim Ray [01:30:07] Burrowing owls. We've had studies on burrowing owls.

Jim Ray [01:30:10] Anyway. That's one thing I think about a lot. You know, when it's time, I want to be known for more than purple martins and birds because I've certainly, you know, worked with other things in my career.

David Todd [01:30:26] Well, that's really interesting. I mean, from, you know, the prairie rattlesnakes, to bobcats, to prairie dogs, to burrowing owls - that's a wide swath of of creatures. And would you look at yourself as somebody who's just maybe better thought of as somebody who's trying to understand how that whole High Plains / Rolling Plains ecosystem works, not any one particular part of it, but how it all meshes.

Jim Ray [01:31:00] Sure. Yeah. And there's kind of a couple of common themes with those projects. They're coming, you know, those species are coming up on radar. Prairie dogs are being proposed for federal listing. That was how I justified that stuff. Prairie rattlesnake - safety issue at Pantex. That's how I justified that. So, you know, just besides wanting to know, and, like you're saying, and contribute to science here, there was things to justify based on the Pantex issues too.

David Todd [01:31:44] I see. Because you, you know, when you were working for I guess for an agency or a contractor, you've got to make the case why it's worth using your time and the resources and money to do this research. And so you're saying, well, you know, in some cases it's endangered species listing that was considered for the prairie dog, or maybe it was safety concerns about getting bitten by rattlesnakes. But you had to make some kind of a strategic kind of argument for why this was worth investigating.

Jim Ray [01:32:16] Yes.

Jim Ray [01:32:17] And just like the migratory bird stuff, you know, we came known as a leader in the complex on the migratory bird work. In fact, the day after I retired, I got a call from DOE in Washington and they would always pick my brain before they went to the other sites in correspondence and things like that. But they wanted me to continue on a contract to consult them. So I consult directly with the DOE in Washington now, even though I'm semi-retired.

Jim Ray [01:32:55] But what I'm getting at is once we did so well in the migratory bird world, the pollinator issues came up and I proposed using that aeroecology technology to monitor monarch butterflies. And so that's how I justified it to them. You know, hey, you loved us being the leader in migratory birds. Here's a chance to do it for pollinators.

Jim Ray [01:33:24] And but, can we stop here and let me fill my glass with water? I'm getting dry.

David Todd [01:33:30] Absolutely. Yeah, sure.

Jim Ray [01:33:33] I have a couple more blurbs on that. Okay.

David Todd [01:33:37] Yes, please. I would love to hear that. Thank you.

Jim Ray [01:33:40] You bet. Just a minute. Okay. You ready?

David Todd [01:33:50] Yeah. Yeah, absolutely. No, I'd be curious. You mentioned the "Aero" program. Is that a radar-based, Doppler radar, or what is it that you're using with these pollinators?

Jim Ray [01:34:01] Yeah, it's NEXRAD radar and, you know, the radar, you can fine-tune it. Well, you tune it back just enough, it shows biological, you know, biological life in the air. And I've given presentations at meetings about this. It's really, really cool technology. You can not only identify biota versus raindrops, you can tell what direction those monarchs are flying, and you can tell which way their body is oriented as far as fighting the wind. And something that we're fine-tuning, OU's fine-tuning, is you can estimate populations. So you get all the radar sites in the country on the southward migration, the monarchs are dense enough, you could develop an index to monitoring monarchs, at least the southward migration, because there's enough of them to show up on radar. So it could be a very big, you know, very big tool.

Jim Ray [01:35:16] Well, let me start on that story that I was going to tell about justifying this project. One day when my coworker and I were walking to the cafeteria, the sky, as far up, as far out as you could see, was full of monarchs. I'd never seen anything like it. So I noted the time. I called DOE. I mean, excuse me, I called OU, and I said, "You got to look at 1145. There's a huge monarch migration." Well, they looked, and the radar was lit up, and, conservative, 3 million individuals in that radar screen. That's conservative. They said there's probably more.

Jim Ray [01:36:00] But I showed that radar picture to my department manager right after he called me and said, "Hey, everybody's calling me. What's with all these butterflies?" Well, I said, "I'm getting ready to bring something over to you." And that sold him right there. And so we ended up funding one year of OU work on this. They disappointed me - it didn't get funded in year two just because of money problems.

Jim Ray [01:36:27] But I'm still working with OU. And we hope we hope to have a publication come out of that.

David Todd [01:36:36] Well, that is such an interesting insight. I'm glad that you left us with that at this, as we draw to a close, because it does seem like, you know, a lot of research and conservation efforts are, I don't know, they're sort of related to other things that are that are sort of haphazard, ad hoc, you know? Yeah, it's hard to be strategic when you've got millions of species. And so the studies and programs that actually get done, I guess, sometimes it's just,

you know, you're in the right place at the right time and you saw all those butterflies and the radar picked them up and you went with it and there was support from the university. It's a lot of things had to go right?

Jim Ray [01:37:23] Yes. And let me say this. And of course, Pantex, DOE, just absolutely, you know, ate this stuff up, the publications and the presentations, because it makes them look good, gives them credibility. Well, I'm a member of the Texas chapter of the Wildlife Society. You know, every meeting you have two or three talks that Pantex sponsored. So the whole wildlife community, and there's usually 900 people at those meetings, I think, students and professionals. Pantex is on the map now, you know, with them.

Jim Ray [01:37:57] And, but one of the one of the proudest things, you know, that I'm proud of. If I went up to the mic at the awards banquet and said, you know, everybody that has been on one of my research projects dating from Parks and Wildlife days, you know, all the way through grad students, professors, agency people, if you've been on one of my projects, would you stand up, it would be amazing who would stand up.

David Todd [01:38:33] Hmm.

Jim Ray [01:38:34] Yeah. Some of some of the administrators in Parks and Wildlife were on, you know, Pantex projects, as students. That's one of the things I'm most proud of.

David Todd [01:38:44] Well, I can understand that. And it's a really nice legacy, because you, not only do you share the information about these creatures, but you, you know, you, I guess, help educate them and pay their bills and, you know, help them continue on with their careers.

Jim Ray [01:39:03] And using the newest technology, you know. Yeah.

David Todd [01:39:08] Well, this has been really interesting and helpful. I'm, you know, very grateful. And I must say, I learned a lot. So thank you very much. If there's nothing else that you might like to say, I would let you go and allow you to get back to what you were doing, unless there's something else you might want to mention.

Jim Ray [01:39:35] Well, I'm just curious how I will get the link, or am I going to get a link or what?

David Todd [01:39:43] Yes, sir, that's right. I will send you a transcript and the audio recording. And I definitely want to continue this whole process with you, so thanks for your interest.

Jim Ray [01:39:57] You bet. And I'll mention this just to you, I mean, I'm familiar with the concept of oral history because we had a historian on our team at Pantex that, you know, did Cold War history, Pantex history. And when sometimes when somebody retired, that's one of the things they did, was oral history. So anyway, that's it.

David Todd [01:40:25] No, it's, it's a wonderful thing that you've been willing to spend some time, share some time with us. So thank you very much. This oral history stuff is just, there's no substitute for it. It's such primary, you know, valuable kind of information, and you can't get it any other way but just by talking to somebody. So thank you for your time.

Jim Ray [01:40:50] Oh, you bet.

David Todd [01:40:52] All right.

Jim Ray [01:40:52] I'm glad, glad to do it.

David Todd [01:40:54] Well, thank you again. And let's keep in touch.

Jim Ray [01:40:57] Okay. Sounds good.

David Todd [01:40:59] Thank you, Jim. Bye now.

Jim Ray [01:41:01] Bye.