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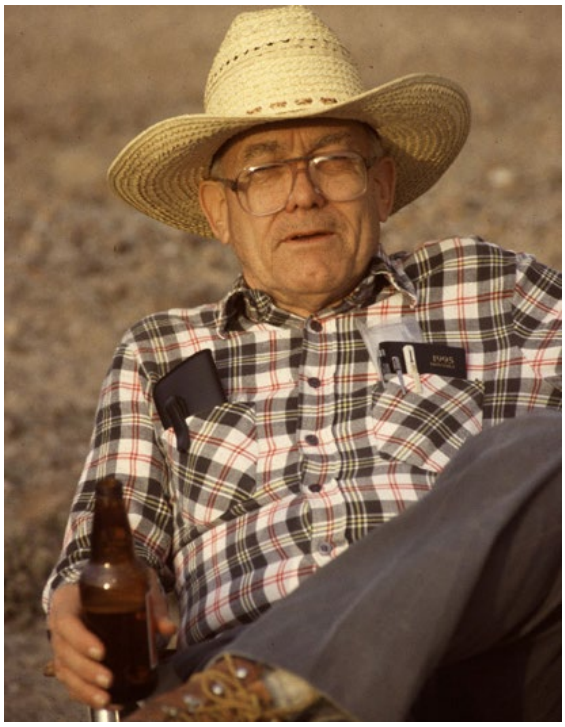

Ernest Lundelius
August 7, 2020

Interview conducted by Vincent Santucci
Transcribed by Teresa Bergen
Edited by Molly Williams

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Narrator: Ernest Lundelius
Interviewer: Vincent Santucci
Date: August 7, 2020
Signed release form: Yes
Transcribed by: Teresa Bergen

Transcript

[START OF INTERVIEW]

Lundelius: Hello?

Santucci: Hi, Dr. Lundelius?

Lundelius: Yes.

Santucci: Hi. This is Vince Santucci from the National Park Service.

Lundelius: Right. Right.

Santucci: How are you?

Lundelius: Well, I'm doing okay. How about you?

Santucci: Oh, well, thank you. Is this still—

Lundelius: You surviving the pandemic okay? (laughs)

Santucci: So far, yes. (laughs)

Lundelius: So far. Yeah, that's us. My wife and I a few months ago moved into a retirement facility here in Austin, which is very nice. But it's basically a lockdown. Things get pretty boring.

Santucci: I can understand. Is this still a good time to chat?

Lundelius: Yeah, sure.

Santucci: Oh, perfect. I really appreciate your time. We have been doing interviews. We're up to about forty now of retired paleontologists that have worked in parks. Also, paleontologists who worked for the National Park Service, like Ted Fremd.

Lundelius: Yeah. Yeah.

Santucci: So, this had been a very valuable undertaking. We're capturing a lot of information firsthand from individuals, and clarifying questions and things like that. So, I'd be interested in

chatting with you regarding your work in the Guadalupe Mountains. And I had some questions for you.

Lundelius: Sure. Sure. Yeah.

Santucci: Is it okay to—

Lundelius: As far as I know, the only locality that I worked on in the Guadalupe Mountains it was actually, for the Park Service, was at Pratt Cave.

Santucci: Yes.

Lundelius: I guess you have a copy of that paper.

Santucci: Yes. What I wanted to do was just a quick introduction, and make sure that it's okay if I record the conversation?

Lundelius: Yeah, that's fine.

Santucci: Okay. So, I have a brief opening statement, just so whoever reviews this a hundred years from now will know who's speaking and what we're talking about.

Lundelius: Right, right.

Santucci: So, just a brief introduction. Today is Friday, August 7, 2020. And my name is Vincent Santucci. I'm the senior paleontologist for the National Park Service Paleontology Program. Today we are interviewing paleontologist Ernie Lundelius. Dr. Lundelius is a retired professor from the University of Texas at Austin. And he has been involved with paleontological work in the Guadalupe Mountains of west Texas. Today's interview is being conducted by telephone from Dr. Lundelius' home in Texas. And I am participated from my home in Gettysburg, Pennsylvania. So thank you, Dr. Lundelius.

Lundelius: You're welcome, yeah. I'm glad to participate. Yeah.

Santucci: Thank you. So, I wanted to start off just for basic background and context, when and where were you born?

Lundelius: I was born in Austin, Texas.

03:46

Santucci: Okay, great. And so when you were growing up, before you went off to college or university, did you have interest in geology or fossils as a young boy?

Lundelius: Oh, yes. I was just discussing this briefly with one of the staff at the Vertebrate Paleo Lab. And I think my interest in this started when I was pretty young. Maybe eight or nine or ten years old. And I think it came about in a specific—I had an uncle who was only ten years older than I. And we used to spend time in Williamson County up on Brushy Creek. And he taught me how to take a flat pebble and throw it and skip it across the water. And I remember one day I was

up there doing this and I picked up one of these things. And I looked at it and I said, this looks like a clam. And what it was a fossil pelecypod from I think the Walden Formation. Cretaceous. And I suddenly realized this. I looked around and then I found a fossil gastropod. And that's what started me thinking what in the world are these things, how did they get there, etcetera. And from then on, I was hooked.

Santucci: Very good. And then, when you went off to college, what college did you go to, and what year did you start college?

Lundelius: I started college at University of Texas at Austin. And let me think about the year. I think it must have been, I think it was in January 1945. I think that's right.

Santucci: Did you know right away what your major was going to be? Your major area of study?

06:04

Lundelius: Yes. It was geology.

Santucci: Okay. And so you completed your undergraduate degree and you decided you were going to go on for a master's degree?

Lundelius: Well, I completed my bachelor's degree at University of Texas at Austin. And then I decided to go to the University of Chicago and work with E.C. [Everett Claire] Olson in his paleobiology, paleozoology program. They did not offer a master's degree. They only offered a PhD. So I started in that program in 1950.

Santucci: Very good. And is that where you completed your doctorate?

Lundelius: Yes. That's right, 1954.

Santucci: Okay. And what was your dissertation research?

Lundelius: It had to do with, let me see if I can make this, what I did was to look at the growth series of two species of lizard, the genus *Sceloporus* which is an extant taxon and very common here in central Texas. I looked at two species, *Sceloporus olivaceus* [Texas spiny lizard] and *Sceloporus undulatus* [Eastern fence lizard]. And I looked at the growth series of the skeletons doing a bivariate analysis to see if they were really separate. And this is prompted by a problem that my professor here at UT, Jack Wilson, had faced when he was working with some Permian reptiles from a site in Texas in which he, if you used one set of things, well, he clearly had a growth series. But the problem was, how many species were represented? And the problem here is that reptiles don't really have a well-defined adult growth cessation which shows up easily in the skeleton. Mammals do, but reptiles don't. So the issue was, how do you, if you have two reptiles that are closely related, how do you separate these things if you don't have a lot of material? Using the skeletons. And so what I did was to measure them, take a very large number of measurements on growth series of each species. And then plot scatter diagrams and run a significance test to see whether or not the regression lines were similar or not. It turns out that they are separate. And you can do it. But just looking at one or two skeletons, you would not be

able to decide very easily, distinguish between these two species. So in a sense, it worked. But it was brought on by trying to get a modern analog that you could apply to a fossil situation of fossil reptiles.

Santucci: Great. Thank you. And once you received your PhD, what was your next venture?

09:50

Lundelius: The first year I was at Chicago, I took a number of classes with a fellow from Australia who had done a double major in Australia; geology and biology. And he was telling me, at that time the history of the marsupial fauna in Australia was very poorly known. And he said he knew some localities that he thought ought to be investigated by a paleontologist. So, he said, "When you get through here, see if you can't get a Fulbright and come out to Western Australia and work some with me."

So I was successful. I got a Fulbright. And when I finished my PhD, I went to Australia for a year.

Santucci: Wow. That sounds pretty exciting.

Lundelius: Oh, yeah. It was. It was really great.

Santucci: And how did you wind up at the University of Texas in Austin?

Lundelius: (laughs) Well, by pure chance. When I got back from Australia that trip, I wound up at Caltech. I had a postdoc there to try to extend the work [that was undertaken] at Chicago had done using the isotopes. But I was looking at trace elements in the bones to see if you could get a signal of, any kind of a reasonable signal out. It turns out it wasn't very successful at all.

But during the time I was at Caltech, I came home to visit and went by to see Jack Wilson, who had been my prof here. And we talked about all kinds of things. And one of the things, one trip back he said, "You know, we're looking for a replacement for a man that just left in the department of geology. We're looking for somebody who knows a little bit about statistics and a few other things." He said, "Why don't you come and talk to us?"

So I talked to some of the other profs there. And in the end, I was offered a professor [position].

Santucci: Well, congratulations. (laughs)

Lundelius: Well, thank you.

Santucci: It worked out pretty well for you, I think.

Lundelius: Sorry?

Santucci: It sounds like it worked out pretty well for you.

Lundelius: That's right. But I completely changed to working on Quaternary mammal faunas. This came about partly because of looking at the work that Olson was doing at Chicago in the Permian. And he was looking at, made a very detailed study, which has been published, by the way, a study in the Permian looking at which depositional system each specimen came from. And what he was able to show is, that three or four, like pond deposits, stream channel deposits, stream over bank deposits, these things if you look carefully had slightly different faunas. So, he was beginning to reconstruct much more details about the ecology of the relationship of the environment to the animals that lived there way back in the Permian. So this kind of struck me as very intriguing.

And then I thought, why don't we do the same thing for the Pleistocene, where we number one is, know a lot of the animals, because some are still alive. We have a much better way of detail dating via Carbon-14. And there are many, many localities that we could work with. So that's what got me into this. Plus the fact of course I'd started this in Australia. So that totally changed my area of research. Which was fine.

13:53

Santucci: Fantastic. So, I understand that at some point in your career you became involved with looking at some cave fossils in the Guadalupe Mountains.

Lundelius: Yeah. And I don't remember exactly how that came about. But I worked on the stuff from Pratt Cave. And then I had a graduate student from Ethiopia who worked up and did a dissertation on fauna from Dark Canyon Cave. Which is not in the park. It's south of Carlsbad a little ways. Then there are some other caves on the west side of the Guadalupes [mountains] that I never really worked in. But I looked at some of the materials that other people were working on. And I don't think, I don't think there's ever been a broad scale synthesis looking at all of those things simultaneously to see what picture do you actually get from the mountains, the Guadalupe Mountains themselves, as they compare with the fauna say farther east onto the Great Plains and the farther west into the Great Basin. So I believe there's still a lot of work to be done. And the material sits around in various collections. I think the stuff from Pratt Cave is here at UT. The stuff from Dark Canyon Cave is here at UT, and it's a big collection. The other stuff, I don't recall where the material is, but it's available.

Santucci: Great. Do you recall what year you worked on Pratt Cave?

Lundelius: (laughs) I think I published it; I just looked at the citation on my computer a little while ago. I think the publication was in 1979.

Santucci: Okay.

Lundelius: I have some field notes. Those are, let me tell you about the problem I face at the moment. My computer here at home has some stuff on it. But a lot of the material is on my computer at the VP lab. And while I can get into that lab anytime I want to wait until the university's basically shutdown.

Santucci: I see.

Lundelius: Because of the epidemic. I don't go out there very often. And I don't have, sometimes I think oh, I know where that is. But it turns out it's on the other computer, not the one I have here.

Santucci: Okay. (laughs) I certainly understand. And so, you probably know better than I that there's a high concentration of caves throughout the Guadalupe Mountains. Including today within Carlsbad Caverns National Park and within Guadalupe Mountains National Park, there's hundreds of caves.

17:05

Lundelius: That's right. Yeah.

Santucci: Did you get a chance to visit any of the others besides Pratt?

Lundelius: Yes, I visited Carlsbad but I've never really looked at the deposits that contain something. But there are those caves on, I think it's on the west side of the Guadalupes that I can't remember the name of them at the moment. And there are two or three there that fellows I knew worked on. Those reports may be in that publication that the Pratt Cave report is in. I don't recall. I'm not dead sure of that.

Santucci: Okay. Do you recall the names Upper and Lower Sloth Caves?

Lundelius: Yeah. That's right. Those are the two I think I was thinking about.

Santucci: Okay. And then within Carlsbad Caverns National Park there's Slaughter Canyon Cave and Musk Ox Cave. Had you heard of any of those sites?

Lundelius: Yeah, I've heard of Musk Ox Cave. I don't remember hearing of the other one. I'm not surprised that there are a lot of caves. For most parts of the world, anytime you get an extensive limestone terrain, you have caves.

Santucci: Sure. Do you recall the first time that you went into Pratt Cave and your impressions?

Lundelius: Not in any great detail. I remember going in there and thinking well, it obviously has a deposit that we should look at. And so several of us started an excavation to see what we could recover. I think there had been some disturbances within the deposits in that cave. That was my impression when we were doing the excavation. Things look scrambled here and there, stratigraphically. So I think that, that never helps, of course, if somebody has been digging around in there and disturbing things. And I don't know who this was or when it took place.

Santucci: Okay. And was there anybody that you recall that was working with you at Pratt Cave?

Lundelius: There was a fellow with the Park Service. I don't think he was actively involved, but I talked to him a lot. And I can't remember his name. He was stationed out there in the Guadalupes.

Santucci: Ron Kerbo, perhaps?

Lundelius: I don't think so. Oh, gee, that's terrible that I can't think of—

Santucci: That's okay.

Lundelius: I just don't remember.

Santucci: No problem at all. So that project then, from your recollection, that all of the collections came back to the University of Texas at Austin.

20:20

Lundelius: That's correct. And that would be easily checked by contacting the fellow in charge of the collection out there. Chris Sagebiel runs our catalog and so forth. And he can tell you almost instantly. Or the other thing you could do is to check that paper I wrote on Pratt Cave. I believe I cited specific specimens that will probably carry the DMM catalog numbers.

Santucci: Okay. And so, during your career, did you work in lots of other caves during your career?

Lundelius: Yeah, I've worked at a fair number. There are a lot of caves on the Edwards Plateau in central Texas. And I've worked on a lot of them. And some of my students have worked in the caves, too. And then I've worked on a number of caves in Australia. That was kind of a, when you work in a large number of caves, in my experience, what I found out was that you, each cave is almost a unique situation. And you have to think about that in interpretation. For example, caves I worked in in Australia, there was one cave I worked in, the only thing we got were the remains of small rodents. And once in a while we'd get the remains of an immature small marsupial. And an array of small marsupials. There was nothing in there of any size.

Another cave, about fifty or sixty miles away, there were a lot of broken bones of, say, medium-sized marsupials. And this kind of puzzled me for a while. And finally one day in the second cave, we turned up the lower jaw of a Tasmanian devil. And that sort of oh, now I think I know the answer. Because the Tasmanian devil will eat the bones and break them up into smaller pieces. And it goes right through their gut basically unchanged.

And then the other case with the very small animals, I'm almost certain from now, from other experience, that those were the remains of owl pellets. And owls, of course, can only exploit relatively small animals. And I think that one was used as a Tasmanian devil den. And the other one was used, let's say, as a roost, or the trees around, as a roost for owls. And they cough up these pellets with the bones of their prey in them. And these things then are, after the pellets sort of disintegrate, the bones are okay, they get incorporated into the deposits.

So each one of these caves is sort of a unique situation. There are caves in which you get mixtures, which clearly was owl pellets being dumped in there periodically. And larger animals were dragging, I guess, prey in.

And in the case of, say, Friesenhahn Cave down there in San Antonio, Texas, Friesenhahn, you probably know about, had the remains of a fair number of the interesting saber-toothed *Homotherium*, including two skeletons of kittens. So that was clearly used as a den to keep the young in for a while until they came out and joined the adults. But every cave is different, and give you a different story.

Santucci: Sure. And since you've worked in some desert Southwest dry caves, have you ever encountered specimens that have been mummified?

24:37

Lundelius: Let me see. I don't think I have. Although a couple of the caves I've worked in, other people had found mummified—this is in Australia—mummified remains of a couple of animals. I never ran across any in my work.

Santucci: Would you think that they're relatively rare in the fossil record?

Lundelius: I suspect they are.

Santucci: Very good. And then, you were talking about the regurgitates, the owl pellets and things like that. Have you come across deposits of sloth dung or other remains of mammalian droppings?

Lundelius: When I was working in Australia, I got a couple of coprolites of, I think a Tasmanian devil because of the broken bones in there. They were still contained there. But otherwise, I think that, I suspect the dung deposits are mostly preserved in the relatively dry areas. And I never ran across that stuff in the Edwards Plateau. I don't think I would have missed it. Most of the ones that I know about in North America are over in the Southwest, in Arizona, New Mexico and I think Nevada.

Santucci: Are you familiar with Rampart Cave in Grand Canyon?

Lundelius: Well, I know the name, yes. I've never been there.

Santucci: Yeah. Pretty thick sloth dung deposits there.

Lundelius: Yeah, that's right. Yeah. Yeah. Yeah. Probably a lot of interesting, maybe it's being done now, I don't know, I don't keep up with everything. But it seems to me that the dung deposits should be reexamined to see if it preserved any DNA. And, if so, from what.

Santucci: Very good. During your career, did you ever have opportunity to work in other national park areas? Either involved in research or student projects or even field trips?

27:09

Lundelius: Well, I made a few field trips into the Big Bend National Park with Jack Wilson. But they were pretty short. And I never really spent any time out there at all with him. Just enough so that I've become roughly familiar with the geology, and knowing roughly where the fossiliferous

deposits were located. But that's, I think that's the only one that comes to mind. And the Guadalupe Mountains National Park. I visited a lot of national parks, but I never really worked in any of the others.

Santucci: Very good. So you had quite a team of paleontologists at UT-Austin with Wann Langston and Jack Wilson and yourself there. All legends in terms of your contributions to the science.

Lundelius: Yeah. Jack and Wann did a great deal of work. And a lot of it, of course, was in the Big Bend National Park. They both worked out there. Wann working mostly with the dinosaurs, and Jack Wilson with the Paleocene-Eocene mammals that came out of the park. So I think they made major contributions to the paleo coming out of Big Bend Park.

Most of our work in Texas was done on the Edwards Plateau on those caves. There have been a few exceptions. Down on the coastal plain, the gulf coastal plain has a lot of material. And there are a couple of three localities I collected material from down there. I'm still doing it, by the way. We've got, just north of Houston. Not a national park, but a nature conservancy tract of land. There's a deposit in there coming off the flank of a salt dome and this has in it the first record from the US. One bloody tooth. (laughs)

Santucci: Wow.

Lundelius: There's a lot of other stuff in there. There's a gomphothere, there's mammoths, and there's pretty well the standard Pleistocene fauna. We're still working on that. But there's some other issues there that we need to consider. We've not solved all the problems at all. Several of us wrote a short paper, mostly to report the taxonomy and I think there's another paper that, I can't remember. Anyway, the work is still going on down there.

Santucci: That's great that you remain active and involved in those projects. That's fantastic.

Lundelius: I'm sorry? What, I'm sorry?

Santucci: I said, that's great that you're still involved in these projects.

Lundelius: Yeah. I've been very lucky. My health's been very good, so I've been able to, after I retired, I could still do a lot of work.

Santucci: During your career in academics, you probably advised and mentored a lot of students.

Lundelius: Yes, that's correct.

Santucci: Do any of them stand out as students that you really enjoyed working with?

Lundelius: Well, yes, in a way, those that continued working. My first graduate student when I arrived was, you may know him, Holmes Semken.

Santucci: Yes.

Lundelius: That's right. Holmes has done a great deal of work in Iowa, and the northern Midwestern area. I think he's made some major contributions up there. He's still active, by the way.

And Russell Graham is another one who was at Penn State for a while. He's now retired. It's pretty bad when your students begin to retire. (laughs) But he's gone back to Denver. I don't know that he's active at the moment. Let me see, I think those are the two that really stand out. Partly because I've worked with them. And some of the other students I've not worked with so much after they left.

32:01

Santucci: When I was an undergraduate, I went to University of Pittsburgh and I worked at Carnegie Museum of Natural History. And my first project was to sort through cave sediments for John Guilday, looking for microvertebrates and mammals.

Lundelius: Yeah. I knew John pretty well. Yeah. He was a very good scientist. Yeah, I've spent a lot of time going through screen concentrates, too, looking for small stuff.

Santucci: So I have one other general question for you. The importance of the understanding the Pleistocene fossil record and changes that are observed relative to climatic change. And a specific example is that using Russell Graham's database, the FAUNMAP, if you look at the distribution of the genus Rangifer, the caribou, the modern range is limited to the Arctic and sub-Arctic.

Lundelius: That's right.

Santucci: But if you go back into the Pleistocene and look at the fossil record of caribou, you'll find collections that have been made from the southeastern part of the United States. Virginia, Alabama, Georgia. And that's fairly remarkable, to think about that short time period between maybe twelve to fifteen thousand years ago, that the range of the caribou was all the way down into the southeastern part of the United States. And I'm just curious, your thoughts about the value of looking at the distribution of Pleistocene fauna as it relates to the discussion of climate change.

Lundelius: Yeah, that brings up a very interesting question. Well, these are sort of hypothetical questions. Do we really know everything about the tolerances of caribou to living in an environment? In other words, what are their limits on their tolerances?

And one of the other things that's turned up that, I don't know if it's been looked at in the caribou, but it has on one of the voles, one of the Arctic voles, which has been found right at the edge of the glacial deposits, the glaciers, fossil glaciers. This is *Dicrostonyx*, this is the collared lemming. And now it's a tundra animal, way to the north. It turns out, Russell told me that they finally looked at the DNA from the fossil stuff and the modern ones and they're not quite the same. And this may or may not be true with the caribou. And I don't know if anybody's looked at the fossil DNA in the caribou or not. Do you know?

35:21

Santucci: I do not know. I know they look at obviously the modern species of caribou. But I'm not sure if it extends into the fossils.

Lundelius: Yeah. Yeah, I just don't know. But DNA is, at times, preserved. And I think it would be worthwhile to do this to see, are you really dealing with, you might say, the same animal? And maybe the answer is yes, in which case we simply don't know the tolerance limits of the caribou. If it turns out the DNA is a little bit different, my interpretation of that would be that you're not looking at the same animal. So I think that's a very interesting question. You know, I hadn't thought about the caribou situation. Maybe I'll bug Russ and see if he knows anything about it.

Santucci: (laughs) Okay. Well, share with me anything you learn.

Lundelius: Oh, yeah. I think there's an awful lot to be learned yet from looking at the Pleistocene record. And one of the things I think we need to do with the record, is we need to go back and do a systematic and very careful re-dating of, well, okay, I'll say everything. But certainly for, in my case, I would say the Edwards Plateau. A lot of the radiocarbon dates that are available were done quite a long time ago. And the technology has improved quite a lot. I think a very largescale re-dating program might yield some information that we didn't know about and increase our understanding of when did the changes take place, how fast and so forth, so there's more accuracy than we currently have.

Santucci: Yeah. I totally agree with you about that.

Lundelius: Yeah. And then, of course, the problem there, of course it takes money.

Santucci: (laughs) That's right. One other question I wanted to ask you, had you heard about the discovery over the past decade of the high concentration of late Pleistocene mammal footprints at White Sands National Monument?

Lundelius: No, I hadn't heard about that.

Santucci: Yeah. About ten years ago, the staff began to observe and document these footprints in the Playa Lake deposits – they're late Pleistocene in age – the Playa Lake deposits that underlie the sand dunes.

Lundelius: Yeah, I knew about the tracks.

Santucci: And so, it turns out that there's thousands of these footprints, including Proboscidean, camel, big cat tracks and others. And it's a very interesting assemblage. The assemblage includes only the second known location in North America of Pleistocene sloth tracks. And we brought Greg McDonald out and he took a look at them and confirmed that these, in fact, are very similar to the ones that were found at Carson City. So, it's the second occurrence.

But the other thing that we, it took us a long time to substantiate, is that we have co-occurrence of human footprints in late Pleistocene Playa Lake deposits, in the same deposits that the mammal tracks are formed.

39:12

Lundelius: I didn't know that. That's very interesting.

Santucci: Yes. I'll send you a paper on that.

Lundelius: Oh, yeah. I'd love to see that. Yeah. So, are there – I know that there's some human footprints have turned up in eastern Africa that are pretty old. And the question that came to mind when I read about that was, well, this may not be old enough. Did it basically have the modern human foot, or did it still have some remnants of say the opposable big toe? And apparently they're all modern humans, as far as I know. But no, I think that's really interesting. I didn't realize they had human footprints in there.

Santucci: Yeah. It took a while to confirm it because, of course, if you're mentioning old records of humans in the New World, you get the archeologists quite upset with you.

Lundelius: Are there good dates on those tracks?

Santucci: Well, that was one of the biggest challenges. Because trying to date Playa Lake deposits presents challenges. Particularly in the gypsum-rich sediments, where there's recrystallization. And so we have finally recently got some really good dates. We brought in the US Geological Survey team. And so they are starting to get some really surprising dates to these remains.

Lundelius: Huh. That's neat. Yeah. Well, I don't want to—are the dates quite old?

Santucci: Yeah. So we have a publication that is in press right now that is going to be published. So we're told that we need to be very careful about sharing it with you. But I'll share it with you because I trust you. We are getting, we have a sequence where we got permission from the National Park Service to develop a trench so that we can get stratigraphic control.

Lundelius: Yeah. Yeah.

Santucci: And we have seven different horizons, stratigraphic horizons, where we have human and Pleistocene mammal footprints. And so, from those layers, the microstratigraphy that they've been able to sample these seeds that are pervasive through the unit. And they have a very beautiful sequence that spans several thousand years of human occupation at White Sands.

Lundelius: That's neat. Yeah. That's great.

Santucci: So, just that point alone that we can demonstrate this longevity of occurrence at one locality. It's almost like the North American Mesopotamia, cradle of human civilization in the New World. So I'm going to tell you the dates, and I hope you're sitting down.

Lundelius: Yes, okay.

Santucci: The dates are strongly indicating that we have a span of between 21 and 23,000 years ago.

Lundelius: Oh, very neat. You know there is a, you probably read about the cave that was recently reported on in Mexico—

Santucci: Yes.

Lundelius: —with dates about the same.

Santucci: Yes.

42:39

Lundelius: Yeah. And there are some others. Some of the archeologists get very upset when you talk about these very old dates, because they put everything about twelve or thirteen. Thirteen thousand. But I suspect people were here earlier, wandering around.

Santucci: Yeah.

Lundelius: Yeah. Yeah.

Santucci: During your career, did you have an opportunity to work with people like Vance Haynes? Did you know Vance Haynes?

Lundelius: Oh, I know Vance Haynes, yeah. I never really worked with him, but I know him. Well, I haven't seen him for quite a while. I knew him pretty well. Yeah. I worked with a lot of the archeologists, going through the bones out of their deposits. Because of course they have deposits that go back in the terminal Pleistocene. So we've been able to get from those a record of the Holocene, which is also, excuse me, interesting, and I think important to know what happened after the glacier, after the Pleistocene. Let's say the last, what was going on in the last ten thousand years.

And we were in a cave in Kerr County, which you probably know about. This is Hall's Cave. And there's a, talk about grad students. Rick Toomey did that for a dissertation. He did an incredibly detailed job. For about three and a half meters, he dug that cave on a five-centimeter interval. And eventually, a large number of radiocarbon dates were obtained. And most, many of which are not yet published. But the record goes back about twenty thousand years, something like that. So he gets a good record through the Holocene. And he by golly can actually pick up the minor change in the fauna looking at proportions of animals that show that warm spell in the middle of the Holocene. So there's a lot of information to be gained from looking at Holocene faunas if they're very well dated. And this brings me back to the comment I made earlier. We'd really like to get a lot of stuff re-dated, because I think we'd begin to pick up all kinds of neat signals as to what was going on in the environment and the fauna.

Santucci: Very good. Yeah, I know Rick Toomey very well. He works at Mammoth Cave National Park.

45:15

Lundelius: That's right.

Santucci: And we're involved in a project with him right now.

Lundelius: Yeah, well, Rick never published his dissertation. I haven't been able to get him to do it. It's two volumes. It's a massive piece of work.

Santucci: Very good.

Lundelius: Next time you see him, next time you see Rick, ask him how he's getting along on publishing his dissertation.

Santucci: (laughter) I'll contact him next week and ask him that question.

Lundelius: (laughs) He'll probably know where you got the question.

Santucci: Did you ever have the occasion to work with Dennis Stanford, the archeologist?

Lundelius: Yes. In a very minor way. Mostly in just not working with him, but discussing various issues. I did this for quite a long, I did this for quite a while, yeah.

Santucci: Fantastic.

Lundelius: I really enjoyed talking to Dennis. He's always a bit of a, well, a skeptic on a lot of things, which is very good, I think.

Santucci: Yes. So in December of 2014, the National Park Service was able to gain a new national monument called Tule Springs Fossil Beds National Monument outside of Las Vegas. Had you ever heard of that site?

Lundelius: What's the name again?

Santucci: Tule Springs.

Lundelius: Tule Springs. Yes, I've heard of it, but I don't know very much about it. Yeah, that's been known, I think, for quite a while, the locality. Well I'm glad you got that as a, it's being taken care of properly.

Santucci: Yeah. So, within the last five years, the National Park Service actually acquired two new national monuments, both based upon their Pleistocene fossil record. So Tule Springs Fossil Bed was established in December of 2014. And then a year later, Waco Mammoth National Monument in Texas was created.

Lundelius: Right. Yeah.

Santucci: And you're familiar with that site, I'm sure.

Lundelius: Right. Oh, yes, yes. I know that locality, yeah. That's great.

Santucci: Did you ever work at that locality at all during your career?

Lundelius: No, I went up there, I'll tell you, that's interesting. I went up there very, very early, when it was first being excavated. And they looked like they were doing a pretty good job. And I'm wondering how in the world did they accumulate these things? At that time, they didn't have the whole count. But it was clear it was going to be a major site down the line. I never really have worked with anybody there. I've been up there a number of times and I've looked at it. Yeah.

Santucci: Very good. Well, thank you. Well, this was very helpful. And you know, what I enjoyed about talking with you is that you have a lot of enthusiasm still. The term that we refer to it as, you still have fire in the belly. (laughter)

Lundelius: Yes. I'm really very, very, very, very interested in the thing. And I don't know how much longer I'll be at it, but probably right to the end. But anyway, new localities always intrigue me no end. One of my colleagues here in the department owns some property in New Mexico. And he has a locality out there which again, I don't know how it's going to turn out to be, but it's really potentially interesting. Possibly it's a late Pleistocene site. And it's kind of a change for him because he's always worked on the earlier reptiles and whatnot. So this will be published pretty soon. I think. I hope.

Santucci: Well, I hope you stay healthy for a long time and continue to contribute. Again, you had an extraordinary career and it's been a real pleasure to be able to talk with you about it.

Lundelius: Well, look, I really enjoyed talking with you. I have a saying I like to say, that vertebrate paleontologists have a major, major failing. They always love to talk about their fossils. (laughter) I've never seen one yet that didn't.

Santucci: That's true. Well, thank you for your time. And I will email you a copy of that paper. What we'll do is that we'll take the audio interview and we'll transcribe it. And I'll send you a copy of the transcription.

Lundelius: Well, thank you. I appreciate that very much. It's been interesting talking to you. I remember talking to you some years ago at the meeting.

Santucci: Yes.

Lundelius: Yeah. Yeah. I hope the Park Service gets treated pretty well with the budget this year.

Santucci: Thank you. Well, you have a great day and thanks again for your time.

Lundelius: Oh, you get you. Yeah. Good luck on everything.

Santucci: Thank you. The same to you. Bye-bye.

Lundelius: See you.

50:44

[END OF INTERVIEW]