National Park Service (NPS) History Collection

NPS Paleontology Program Records (HFCA 2465)
Vincent Santucci's NPS Oral History Project, 2016-2024

Rick Toomey
September 17, 2020

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

This digital transcript contains updated pagination, formatting, and editing for accessibility and compliance with Section 508 of the Rehabilitation Act. Interview content has not been altered with the exception of omitted birth date PII.

The release form for this interview is on file at the NPS History Collection.

NPS History Collection
Harpers Ferry Center
P.O. Box 50
Harpers Ferry, WV 25425
HFC_Archivist@nps.gov

Narrator: Rick Toomey
Interviewer: Vincent Santucci
Date: September 17, 2020
Signed release form: Yes
Transcribed by: Teresa Bergen

Transcript

[START OF INTERVIEW]

Toomey: Is on speaker okay?

Santucci: Yes. Yeah, I can hear you well.

Toomey: Okay.

Santucci: All right. Today is Thursday, September 17, 2020. My name is Vincent Santucci, the senior paleontologist for the National Park Service paleontology program. Today we are conducting an interview with Rick Toomey, the cave resource management specialist, research coordinator and vertebrate paleontologist at Mammoth Cave National Park. Rick has a long history of work with the National Park Service, especially in support of cave paleontology projects. The interview is being conducted by telephone from Rick's office at Mammoth Cave. And I am at my home in Gettysburg, Pennsylvania. So thank you, Rick.

Toomey: Sure thing, Vince.

Santucci: Okay. So, a lot to talk about. The first question, pretty easy. When and where were you born?

Toomey: I was born in Michigan.

Santucci: Okay. So you're pretty young.

Toomey: Yeah. (laughs) We'll go with that. Thank you.

Santucci: Okay. Before you attended university or college, what was it like growing up? Were there any things that sort of drew you towards caves or paleontology as a young person?

Toomey: I grew up, I actually grew up in Columbus, Ohio. And I was very interested in geology and paleontology. As I tell some people when they ask how you become a paleontologist is you play with dinosaurs when you're a kid, and you never quite grow up. I collected rocks and fossils as a child, especially Devonian fossils along the Scioto River in Columbus, Ohio. So from that standpoint, I was interested in paleontology from a young age, and geology. I'm unusual in cave scientists in that I did not really get into caves, to doing a lot with caves, until graduate school. And that was through my work in paleontology. And for the first ten years of that, I kept claiming I was not a caver, I was simply a paleontologist who happened to work in caves. Until people stopped believing me on that.

Santucci: (laughs) Okay. So, what year did you begin your undergraduate degree? Where did you go to school? And did you know you were going to go into a geology program right away? Or did that develop through your undergraduate career?

Toomey: I began undergraduate in 1981. I went to Brown University. And I planned to go into geology when I went to Brown University. And I did continue with that. But actually not much in the way of diversions toward other majors.

3:42

Santucci: Okay. And during your undergraduate career, did you begin to get experience doing field work?

Toomey: Not, not actually, not terribly much. Some. We'd do field trips. But I will say, Brown University's geology department back at that time was much more academic-oriented and a lot less field-oriented. So I did not get to do a lot of field work in geology at Brown. I had a wonderful education there. But it wasn't a really, a lot of hands-on field work.

Santucci: Okay. And as an undergraduate, then, is that when you decided you wanted to go on for a graduate education?

Toomey: Yes. As an undergraduate, I decided I wanted to go in for a graduate education. Interestingly, it wasn't clear exactly what part of geology I would go. I looked at, I knew I was interested in Quaternary geology. But at first it wasn't clear whether I wanted to go and do like palynology or vertebrate paleo. I knew I was interested in the Quaternary and environmental change and changing climates and glaciations. So there were a couple of different possible areas I might go in, directions I might go with that. And when I went to, when I applied to graduate schools and visited, I found that I had the best rapport and interest with the vertebrate paleontology people.

Santucci: Okay, great. And so what year did you begin graduate school, and what university did you attend?

Toomey: I began, I started graduate school in 1985. So I went straight from my undergraduate to graduate school. And I went to the University of Texas at Austin.

Santucci: Did you have a primary advisor? Or did you have a chance to work with some of the notable paleontologists there?

Toomey: I got to work with a number of the notable paleontologists there. My primary advisor was Ernie Lundelius. I got to have classes under Jack Wilson. Classes under, classes with Wann Langston. Tim Rowe was on my, I had classes with Tim as well as he was on my thesis committee, or my dissertation committee. I had classes and TAed under James Sprinkle, the echinoderm paleontologist. And actually, non-paleontology, but Bob Folk, the carbon 8 guru, was also on my dissertation committee.

Santucci: Wow. That's quite a hall of fame list of geologists and paleontologists.

Toomey: Yep.

Santucci: Outstanding. So I'm going to probably come back to those names shortly, but did—

Toomey: I'm going to cut in one more name. Of the University of Texas geography department, I also worked with Steve Hall, who is a palynologist, a Quaternary geomorph person.

Santucci: Okay. Very good. Very well-rounded team you worked with. And so, did you do a separate master's thesis? Or did you go straight through for a PhD dissertation?

08:25

Toomey: I went straight through for a PhD dissertation. And the year I, when I was going there, University of Texas had just switched from an orals and written plan to a put together your thesis proposal and an oral defense of that.

Santucci: Okay. And your dissertation research involved?

Toomey: An exhumation and analysis of a cave site in central Texas. It has a pretty much continuous deposition and continuous fossiliferous for the last 18,000 years. It had an incredibly abundant small mammal, small bird, reptile amphibian record. Also had some archeological components to it as well. And it's a cave called Hall's Cave. It was just located on the Edwards Plateau in central Texas and just had amazing paleo-ecological record.

Santucci: Fantastic. And so—

Toomey: My dissertation focused mainly on the mammals and especially the small mammals, although I identified some birds and some herps as well. But the main focus was small mammals. And especially as we call it, bats, rats, moles, and voles.

Santucci: Okay. (laughs) What year did you defend your dissertation?

Toomey: I defended my dissertation in, I defended my dissertation in December of 1993, and graduated in the spring, '94, 1994.

Santucci: Okay. Thank you. Briefly, can you share some experiences that you had both in the classroom and in the field with Ernie Lundelius?

Toomey: Oh, Ernie was absolutely amazing. I worked with him quite extensively in the field. We had amazing times out at Hall's Cave. He came out and taught me how to approach a site. This cave was in the middle of a ranch in central Texas. So we would drive there, camp out right next to the cave, bring in water, bring food. Just camp there and work all day in the field. He was there when I saw my, pointed out the first rattlesnake in the cave entrance to beware of. Let's see. I managed to kill a butane refrigerator out in the field (laughs) that belonged to the Texas Memorial Museum. And it was just amazing to see how he worked with me. Helped teach me how to plane table and select an excavation site and set up a grid. And how to keep control for levels. I also went with him to some other sites like Longhorn Caverns, that Holmes Semken did his master's thesis at. Let's see. I'm trying to think of—oh, I got to work with him on a couple of

smaller finds in the Austin area as well, help excavate some smaller finds, smaller Pleistocene, Pleistocene megafauna. But you know, a bone here, a bone there.

I also TAed under Ernie in a number of classes, particularly an amazing class called Life Through Time. I also was the assistant instructor on that. It was basically an introduction to historical geology. And so that was a very good experience. Ernie was a very good instructor, a teacher of both undergraduate and graduate level. And a great time working under him as a teaching assistant as well.

Santucci: Great.

14:27

Toomey: And it was also a really, I had just an amazing group of other graduate students who were there, who I overlapped with at Texas. So that was a wonderful thing about the University of Texas program is there were so many professors doing so much in paleontology that there was a relatively large, diverse crop of graduate students you got to work with.

Santucci: Do you want to just list a couple of names?

Toomey: Sure. When I arrived, Jim Westgate was there working on Eocene paleontology in south Texas. Overlapped a lot with – Annie Walton was also there – overlapped with Jeff Pittman, who worked on dinosaur trackways. Later, Gorden Bell working on mosasaurs. Chris Brochu on crocodilians. David Froehlich on early horses. It was just an amazing place to be and time to be there and to work with all these various paleontologists. And actually on staff, people like Sally Shelton was there doing conservation. And learned a lot about conservation of fossils and how to approach museum resources from Sally. Kyle Davies was a preparator there at that time. And Earl Yarmer. So we got to work with people at all different levels. And Melissa Winans was the collections manager at the Texas Memorials Museum, at the vertebrate paleo collection at that point. So we just had a great group of people to work with. I should have mentioned Ann Lyle doing dinosaur – doing small, Cretaceous mammals and Cretaceous stratigraphy for her master's. And Tony Runkel doing Tertiary mammals. Those two will both come up because I helped them on projects in Big Bend while a grad student.

Santucci: So that was my next question. During that time period, were you involved in any projects associated with the national parks? So can you elaborate a little bit more about the Big Bend work?

Toomey: Sure. Big Bend, at that time, with Jack Wilson and Wann Langston, Big Bend was a major field area for the University of Texas. And there were a number of students working on projects in Big Bend. And as a student in the program, if somebody needed extra help, then you got to go out in the field and help with things. Plus there were also nice field trips out there just to look at deposits, look at the geology out there. And start learning techniques.

In particular, I remember one amazing trip leaving Austin on a Friday with Jeff Pittman and Tony Runkel. Stopping and measuring dinosaur tracks at three or four sites on the way out to Big Bend. And then collecting, dragging out an almost complete oreodont that Tony had excavated and had had a plaster jacket on, but needed extra muscle to drag this oreodont about a

mile to get it back to the vehicle for bringing back to the lab. Got to assist Tony on that. One Memorial Day weekend, I was out with Ann Lyle measuring section in the Cretaceous, Javelina and Aguja section. So that she would have enough data to get her GSA abstract in on the Tuesday after Memorial Day. (laughs) So it was helping measure section out in there. Out looking at, with Gorden Bell at some mosasaur material and some nautiloid material in the Boquillas Formation exposed in Big Bend. So I got to help with several project out in Big Bend.

20:51

Santucci: And did you get a chance to go into the field at Big Bend with Wann Langston? And is there anything you recall about that experience?

Toomey: I got to go in, Wann led us on a field trip in Big Bend for one of our classes. I was fortunate, when I came in, I came in with five people coming in at the same time. So we had a lot of graduate classes make and it would just be the five of us, or the five of us plus one or two of the older grad students who hadn't taken a particular class. So we did get to go out to there. So Wann took us out and was finding us how to find dinosaur bone. It's where I learned to use my tongue to tell bone from rock fragment. Where the bone will stick to your tongue slightly compared to most of the rock. So it can help in finding some of the bone fragments. Seeing, actually one of the amazing things was seeing deteriorated, a hadrosaur or sauropod fossil. It was so eroded that was like oh, are we going to collect it? No, there's nothing here that's actually worth collecting for the thing, it's so badly deteriorated. Yes, there's a big pile of dinosaur, of fragments of bone. But it's not worth trying to collect every bone fragment and realizing that they were, that many of them were eroding away. But also that just because it was a bone fragment didn't mean that it was, that every piece of bone fragment isn't necessarily going to be significant. And you do need to think about how, what things need to be collected and what things aren't worth collecting.

Santucci: So, Ernie Lundelius did a little bit of field work in the Guadalupe Mountains. Did you accompany him at all into the Guadalupe Mountains?

Toomey: No, that was, he did most of his field work before my time in the Guadalupe Mountains.

Santucci: Okay.

Toomey: I worked with some of the stuff in the lab, and included it in some summaries of cave paleontology of Texas. But I did not get to go into the, get into the Guads [Guadalupe Mountains] with Ernie.

Santucci: Did you know Lloyd Logan? And were you knowledgeable at the time about the discoveries at Musk Ox Cave at Carlsbad Caverns?

Toomey: I was familiar with the Musk Ox Cave stuff because some of the early Musk Ox Cave stuff came to Texas Memorial Museum. So they had a small collection of it. So it was my first time seeing shrub oxen. (laughs) Euceratherium. But I did not, and I was familiar with Lloyd Logan's work, but I did not get to meet him.

Santucci: Okay. So, during that time period between about 1985 and 1994, the three parks that you had some involvement included Big Bend, material from Guadalupe Mountain, and then you had mentioned in some information you sent me that you did a little bit of work for Amistad.

25:25

Toomey: Actually I did, of the three, my most substantial work was actually Amistad. This was at a time, this was obviously late '80s. And two things were happening that you may, you probably remember. One was NAGPRA. The other was the fact that the Park Service was waking up to the fact that it had a huge amount of material stored in lots and lots of repositories and it didn't really know what it had. And it wasn't sure its repositories were doing a good job of cataloging and keeping track of it and of making sure that they knew what they had. That the Park Service knew what the repositories had. So, at that point, the Texas Memorial Museum, or the Vertebrate Paleontology Lab, was next door to the Texas Archeological Research Lab. And there was overlap in collections from those two things. And it essentially overlapped a lot with the 1930s excavations in the huge numbers of dry rock shelters that were inundated in the creation of Amistad Reservoir. So these were rock shelters, some of which were inundated, some of which were just near, in the area. These include famous Pleistocene sites like Bonfire rock shelter, which was a bison jump, a Pleistocene bison jump site.

But there was a huge excavation during the WPA/CCC era of these rock shelters before the damming of the Rio Grande River. And so, the Texas Archeological Research Lab and Vertebrate Paleontology Lab had immense amounts of material from this. And they got funding, the archeological lab got funding, and used some of it to hire me as a research assistant to, the original job was how many pieces of bone were from each of the provenances in each of these sites. They had other people counting how many pottery fragments, how many lithic fragments, etcetera. But the job was to count how many pieces of bone so they could send the Park Service a note that said, "We have this many pieces of bone from Centipede Cave. This many pieces of bone from Coon Tail Spin." Etcetera.

And so I asked, "Hey, does anybody mind if I actually sort it? Can I sort the identifiable deer from the gar from the rodent material? And at least bag them up separately, catalog them as interesting stuff? Can we catalog them in the vertebrate paleo collection?" Et cetera.

So I sorted and identified a lot of material from the Pleistocene and Holocene rock shelter and cave site in Amistad. And it actually ended up making, I ended up making a find that became one of my first abstracts when I was able to identify sturgeon from these deposits. And previously, well, sturgeon was not an accepted member of the Rio Grande fauna. And there was one 1930s record that was strongly questioned as to whether sturgeon existed in the Rio Grande River. So I was able to find sturgeon material. And I did an abstract and talk at SVP. That was like '91, I think. Yeah. That was '91 in San Diego I did a talk on sturgeon deposits at Amistad.

Santucci: And just by chance, do you know where those collections reside at this point?

Toomey: Texas Memorial, Vertebrate Paleo Lab.

Santucci: Okay. All right.

Toomey: The sturgeon are cataloged into the vertebrate paleo collection.

Santucci: Okay. Excellent. Thank you.

Toomey: The problem was, sturgeon had always been, all of the sturgeon material was just sorted as gar because it was, it had an enamelly look. So they were all thrown in with the gar material. And you had to look and say hey, this really doesn't, this isn't a piece of gar skull. Turned out to be shovelnose sturgeon.

Santucci: Very good. That's an interesting project. So, in 1994, then, you departed Texas and you went to Illinois. Was that part of a postdoc? Or what was the Illinois State Museum position?

32:14

Toomey: Yeah. Initially, I joined the Illinois State Museum as a postdoc under Russ Graham. And he had National Science Foundation funding, looking at cave and some surface, but primarily cave Pleistocene cave faunas in the Upper Mississippi Valley, or Middle Mississippi Valley in Illinois, Missouri area. And I was hired to work on this project. I was a postdoc on that project. That one mainly didn't involve any NPS localities. But a number of caves in Perry County, Missouri, Saint Genevieve County, up towards Saint Louis, and Monroe County, Illinois.

Santucci: Okay. During your time at the Illinois State Museum, were you involved in any sort of national park-related projects?

Toomey: Yes. Yes, actually, very much so. It's how I ended up involved with Mammoth Cave. In, let me make sure of the, yeah. In 1994, actually very shortly after leaving Texas, I gave a talk on some of my bat fauna work from my dissertation site in Texas at the National Speleological Society's annual convention in Bracketville, Texas. And a person who was in the audience that day had recently, it was Rick Olson. And he had recently been hired as the ecologist for Mammoth Cave National Park. And he knew of bone deposits at Mammoth Cave. And after my talk, he came up to me and said, "Hey, you're up in Illinois? You need to come down to Mammoth Cave. We've got some bat bones that you need to see."

So in '94, while still a postdoc on the Mississippi Valley project, I arranged to come down to Mammoth Cave. And Rick Olson took me to Bat Cave in particular. We also looked at some stuff in Mammoth Cave. But Bat Cave, a small cave in the park that has one of the densest bat bone deposits that I have ever seen. It looks like someone, well, bat bones, bat long bones tend to look a bit like toothpicks. And it's like someone took thousands and thousands of toothpicks and just piled them up and threw a little mud around them. This won't make a whole lot of sense in the transcript, but I'll tell you, Vince. It does for bat bones what all these pictures we keep sending of the J2 do for crinoids.

Santucci: Okay.

Toomey: It's just pure bat bone hash. So we started working on that. And initiated a paleontological inventory here at Mammoth Cave. Rick got at that point what would have been

NRPP funding for a paleontological resource inventory. And contracted the Illinois State Museum to begin this inventory focusing on the Pleistocene and Holocene deposits in the park.

Santucci: Okay.

Toomey: And particularly in the caves because that's where we were able to find them reasonably well. I worked on that. Mona Colburn from the museum staff worked with me and continued it after I left for Arizona and finished that portion. Blaine Schubert also came between his master's and his PhD work. And worked with us as well on the Mammoth Cave project.

Santucci: Great. And—

Toomey: So we worked—go ahead.

38:09

Santucci: The report that you produced for that, is that in our Teams folder for the project?

Toomey: Yes.

Santucci: Okay.

Toomey: Oh, absolutely.

Santucci: And you have photos?

Toomey: Pardon?

Santucci: You have photos from that project?

Toomey: Yes. We have some. We have some photos. WE have photos from that project. The report is in the Teams folder, as is Mona Colburn's master's thesis. She took portions of that project and turned it into a master's thesis as well. And then there are several other publications that came from that. Among the things we found, among the interesting things during that project was vampire bat remains at Mammoth Cave. We located a Sangamon vertebrate fauna, a last interglacial vertebrate fauna that had armadillo, had horse, had water rat. We found, in another place, we found a Pliocene hellbender, a cryptobranchus. We found, or we continued to analyze something that was already known, large, free-tail bat guano deposits, and free-tail bat deposits that would be a few hundred thousand, probably a few hundred thousand years old. Maybe dropping, maybe as young as thirty for forty thousand on some of them. We're still working on some of the dating to understand what's going on with some of our free-tail guano deposits. We actually still have not found mammoth in Mammoth Cave, although we did manage to find that the proboscidean material that Ron Wilson, some of the proboscidean material that Ron Wilson had collected, we found that deposit. And Mona was able to work with Dan Fisher at Michigan State to determine that we had mastodon, but not mammoth. So, we, so we worked on that project from around '96 to, I left the Illinois State Museum in 2001. Mona finished the report, I think, in 2004. So that's been an incredibly exciting site.

Actually, work on that project is part of what ended up driving, that drove my switch from being an academic paleontologist to being a resource management person. Because one of the things we were looking at here at Mammoth Cave on the paleontology project is huge amounts of bat remains. And paleontological evidence of bat use of large portions of the cave. And several caves in the park. But today, we don't see those millions of bats. And so I was working with Rick Olson and others looking at what are these changes telling us about how the cave has changed? And I got very interested in how caves are impacted and what impact that has on bats and other fauna. And I got very interested in that resource management side. In addition, I'm a consummate generalist. And I find that resource management allows you a lot more fun in, as a generalist than academics does.

Santucci: Okay. Very good. Yeah, this is very interesting. So the collections from that project, are they at the Illinois State Museum? Or part of them at the park? Where are those collections today?

Toomey: Most of those collections are at the Illinois State Museum now.

Santucci: Okay. And I assume they're cross-referenced with the National Park Service catalog system.

Toomey: Oh, yes.

Santucci: Okay. Good.

43:48

Toomey: When the Illinois State Museum, when the Illinois governor tried to destroy the Illinois State Museum, we were in conversations to make sure that the collections, depending on what was going to happen to those collections, etcetera. So yeah, those are ones that are cross-referenced and well characterized.

Santucci: Okay. Perfect. So you were at the Illinois State Museum between 1994 and 2001.

Toomey: I did the postdoc, then I was on a couple of grant-funded positions and then was hired by the museum as an assistant curator of geology. Essentially I was hired to replace Ross Graham when Ross went out to the Denver museum.

Santucci: Okay. And just a final question about that time period, other than Mammoth Cave, were you involved in caves or paleontology in any other National Park Service area?

Toomey: I did a little bit at, I looked at a couple little bat deposits at Cumberland Gap at that time. And at that time, I also was involved in the Cave Research Foundation establishing a project at Cumberland Gap, which will bring me back to look at a bear at Cumberland Gap a number of years, sometime around 2007.

But at this point, and I may, this is something I'm not sure how much we need to – Park Service may need to figure this out. The Illinois State Museum houses Oz [Oscar] Hawksley collection out of central Missouri. It was a huge cave paleontology, it's a large cave paleontology

collection assembled from the ‘50s through the ‘70s or ‘80s, when Oz [Oscar] Hawksley was a professor at Central Missouri University. I don't know if any of those sites are on Ozark, were on Ozark Riverways or not. It may be something that the Park Service may need to look into to see if we have any Ozark Riverways collections at Illinois State Museum that aren’t archeological. There are archeological, I think there are archeological ones from mussel shell mounds and things from Ozark. But I don't know if there are vertebrate paleo collections. And if so, whether Ozark knows that they’re housed there.

Santucci: Okay. Very good. I’m making a list of to-dos, questions that we should follow-up on.

47:40

Toomey: Yeah. It just dawned on me. I worked a lot with that collection at like Peccary Cave. There’s a number of caves. I just don’t know if they’re all, you know, if they were all private land, if some were Mark Twain Forest, if they were Ozarks. Where, exactly, each of those caves was.

Santucci: Okay. Just to go back to Cumberland Gap for a minute, can you just give us a little bit more of a synopsis in terms of the work that you did there?

Toomey: At that point, well, okay. I’ve done several things with Cumberland Gap. While I was the Illinois State Museum, I just made a trip down to look at a couple of, they were doing some trail redevelopment and their cave person knew me from Mammoth Cave. He had been a guide at Mammoth Cave and knew of Cave Research Foundation. And I was research foundation president at that point. And he invited me to come and look at Gap Cave and their trail redevelopment project. But also to work with the people there who were trying to organize a mapping effort. So I helped them organize under the auspices of Cave Research Foundation to begin systematic work under an agreement with the Park Service that has continued to this day.

Later in, after, sometime around 2007, I went back and evaluated a poorly preserved bear skeleton that’s back in, a mile and a half back, or two miles back, in Gap Cave. And helped assess and determine that it was indeed an ursus americanus. It was not Arctodus, it was not any of the more unusual Pleistocene bears. It is a black bear and that it was poorly enough preserved that it was not worth, it wouldn't survive the trip out.

Santucci: Did you determine whether it was Holocene or Pleistocene?

Toomey: No. the bone was pretty badly leached, so I don't think that there was a really good potential for a radio carbon date on it. There were a couple of nice teeth but that allowed for identification. I mean, it would be possible if we wanted to potentially collect a tooth and try radiocarbon dating on it. But that has not been done.

Santucci: Okay. And then during that same time period, there was an oil spill at Chickamauga Chattanooga National Battlefield.

Toomey: Yes.

Santucci: Were you involved in any of those discussions because of the cave impacts, particularly with vertebrate fossils in some of those caves?

51:38

Toomey: Yeah. I was involved in the conversations and it was potential of going and helping assess in person. But I think, I think, I don't know if Park Service, I think someone eventually decided that they were concerned that it wasn't safe to send people in to look at it. I was interested in doing so and willing to go. I had conversations, I think some with Kerbo, I think some potentially with you. Lindsay McClelland may have even mentioned it to me as well. Fred Grady might have also mentioned it to me. But we were never able for me to arrange anything for me to come on down and do an in-person assessment. Which I regret. Because my understanding of everything I've read is the fossils in those sites are just amazing.

Santucci: So I'm trying to remember the cave names. I think one was called Kitty City, and there was another one called Seven Spiders or something like that. Do those names sound familiar?

Toomey: I'm not sure. No. I wasn't sure of exactly which site or whether, I wasn't sure whether Lookout Mountain Cave was involved in any of this as well. So, I'm not sure.

Santucci: Okay. Were you aware that one of the caves has some large cats. And in that same cave, was sort of a natural trap where there were claw marks from the cats.

Toomey: Yeah.

Santucci: You were aware of all that. Okay.

Toomey: Yes.

Santucci: Anything else you know about those caves and the resources, the paleontological resources?

Toomey: No. No. If you need someone to take a look at them, I'm still potentially available and can get a team down.

Santucci: Oh, well, that would be great. It's something to consider. Do you know, does the park have a cave resources person or a resources management specialist that you might be aware of?

Toomey: I'm not sure whether Chickamauga-Chattanooga has a natural resources person. Do they actually have a natural resources person?

Santucci: We can find that out through Southeast Region.

Toomey: Yeah. I just, I don't know. I think they are heavily cultural resource. And it would seem they've got enough space that they should have some natural resource. But I'm not sure whether they, I know that they largely depend on the I&M network for help.

Santucci: Okay. All right. Sure. That makes sense. All right. So, let's see. Starting around 2001 then, you moved to Arizona?

Toomey: Yes. I moved to Arizona State Parks as their cave specialist and later science and research person. Can partially be read as token PhD. So I went there as a cave specialist. But when questions came about rock stability or carbon monoxide studies at Lake Havasu or things like that, it was like, "Can you read this and tell us whether we should allow this project?" or something, because I was the token PhD scientist. Again, joys of resource management. But primarily I was overseeing resource protection at Kartchner Caverns.

56:13

Santucci: Okay. All right. And is that a National Natural Landmark, do you know?

Toomey: I believe they did get that status, but I'm not positive.

Santucci: Okay. That's easy enough to check. So while you were at the Arizona State Parks, and my understanding is that's between 2001 and 2005?

Toomey: Correct.

Santucci: Were you involved in any sort of national park-related paleontology or cave work?

Toomey: Yeah. Actually, I was. And the funny thing is, most of it is summer 2004. In the summer of 2004, one of the things as, I was still Cave Research Foundation president. So I went up to Lava Beds on a trip there representing the Cave Research Foundation while they were opening their new visitors' center and breaking ground on a housing and lab facility that the Cave Research Foundation was helping fund. While I was going to be in that neighborhood, well, I did several things. One, I participated with Cave Research Foundation caving expedition at Lava Beds. And did, inventoried some bone material in some sites while we were doing cave survey in them.

In addition, since I was going to be in the area, John Roth asked me to come on up to Oregon Caves. They were looking up to open a wild caving route. But there were several fossil areas off trail. And they wanted someone who both knew wild cave type trails and fossils to take a look and see whether various pieces of their route would adequately protect the fossil areas, not impacting, make sure they didn't miss anything for their routes. So I went through with them and helped advise on a couple of options on their wild caving route.

Santucci: And when you say wild caving route, what does that mean?

Toomey: Okay. When we're looking at show caves, or toured caves, there are sort of two different types of tours. One would be a regular walking tour, usually with electric light. People are in street shoes, walking through, seeing the cave. The other one are tours where you give the visitors a helmet, headlamp. Put them in some coveralls. They're wearing boots. And they get to experience what it's like exploring in a cave. Climbing, crawling, canyoning, doing these types of things. Getting muddy. So they have a nice concrete path walking tour, but they were also developing an off trail—and when I say off trail, to the visitors, these are off trail. For these

caves, we have very, here at Mammoth Cave, Oregon Caves, we have defined routes that are allowed that are allowed because we know what resource impacts might occur, are allowed because any safety issues are adequately managed, et cetera. So it's not like these aren't on a route. It's just a muddier trail, a more sporting trail that allows the people to feel that they are getting a more, we'll say authentic experience in the caves.

1:01:23

Santucci: Okay. Got you. So did you actually go to Oregon Caves, or—

Toomey: Yes.

Santucci: —were specimens sent to you?

Toomey: No, no. I went to Oregon Caves and went through the route with John and a couple of their people looking for material, you know, and saying hey, we're thinking of this or this, what do you see? Is there a problem? Is there a problem here, or are we too close? We know the fossils, we've got these fossils back here. How close do you think we can reasonably get? Those types of questions.

Santucci: Okay. And the material that you looked at, the fossil material, was anything of interest?

Toomey: Again, most of the stuff was still in the dirt. So we didn't focus heavily on a lot of close identification of the material. I was just there for like two days. Although we did get near the cheetah material.

Santucci: Okay. Good. Excellent. Anything else about Oregon Caves?

Toomey: No.

Santucci: Okay. So during that same time period when you were in Arizona, you were involved in a survey trip on Horseshoe Mesa in Grand Canyon National Park?

Toomey: Yes. Yes.

Santucci: Can you tell us about that? Was that cave-focused?

Toomey: That was cave surveys. Again, well, actually it wasn't. Tom Gilliland got the – worked with the park and got the permit for that. And I came along both to help on cave survey and to help with inventory of the caves. We hiked down to Horseshoe Mesa and surveyed a number of the small caves there on Horseshoe Mesa doing, both mapping the cave and identifying various resources. Any biology we would see in the cave, any archeology. Bone material, saw various, some Neotoma material, both midden and just bone. Little bit of—I looked it up, I looked at one of the reports, one of the things I wrote up for that the other night in preparation for this—had some kind of grouse bone as well. I couldn't take it any further in the field. And I provided that information as part of the report that went into the park on that research permit that allowed us to go and do that survey.

1:05:04

Santucci: So, was this requested by Grand Canyon National Park? Or were you part of a team that went in? Or how did that—

Toomey: It was with a team. The leader was [A.K. Kaber?] out of northern Arizona was interested in developing a larger project. So we approached the Park Service and this was part of a here's what we can do for you, if you'd like to work with us and let us do some more of this, we can provide you with this kind of data.

Santucci: Okay. And let's see. You mentioned there was a report. Is that something you have a copy that you could send me, so I can get it—

Toomey: I can send you the notes that I had from the cave. Yeah.

Santucci: Yeah, I can get it into the archives for Grand Canyon as well. And then was it one cave or multiple caves? And do you have the names?

Toomey: It was multiple caves. There were multiple caves. We had a team of about seven people, or eight people. We hiked down one night. Or hiked down, spent the day doing some caving. Camped overnight there on Horseshoe Mesa. Caved some. We hiked down on a Friday, caved all day Saturday, caved part of Sunday morning and then hiked back up from Horseshoe Mesa with all our stuff. It was a lot of fun. Actually, Horseshoe Mesa was a really nice location. Horseshoe Mesa, the caves are sitting right in the side of the Horseshoe Mesa, right in the red wall. We're in just beautiful red wall caves.

Santucci: Do you have any recollection of the names of the caves, or designations?

Toomey: I've got names in some notes. I don't have them with me here. I'll get those for you.

Santucci: All right. Thank you very much. Let's see them. Very good.

Toomey: I worked a little bit, well, also in Arizona. Worked on some cave and bat issues with Coronado National Monument. But not on any paleontology issues. And then with national forest on a couple of their caves and things. But not, but no paleontology in any of those.

Santucci: So you left Arizona in 2005 to go to Kentucky.

Toomey: Yes.

1:08:23

Santucci: So, let's see. For clarification, did you work for the Park Service? Or was there some association with Western Kentucky University? Or how was your position set up at that time?

Toomey: Yeah, that's a perfectly great question. I came to Kentucky in 2005 as the director of the Mammoth Cave International Center for Science and Learning. It was a research learning center. However, it was not a base-funded research learning center like Appalachian Highlands

or I forget what's the national capital one. I can't remember what the name of that one was. But instead, it was weirdly funded. I don't know how familiar you are with the research learning centers.

Santucci: Yes. Uh huh.

Toomey: Okay. As you know, they were funded in groups of three or four. Rolled out. And Mammoth Cave had been approved for one but then the funding for the research learning centers got cut after they had created the first about twelve or thirteen. They were supposed to have had about thirty. But they all of a sudden ceased funding for them. So, and this is in the bad old days of park funding. So Mammoth Cave was supposed to have one, and then didn't get to. So, Mammoth Cave chatted with their friends at Western Kentucky University, who had lobbyists who were allowed to talk to people like Kentucky senators. And they put a line item in the Park Service budget to fund a research learning center at Mammoth Cave. The Park Service would do a cooperative agreement with Western. And the money would go through the Park Service to Western for this learning center. The original understanding from the university and the park was that they were going, that this was going to be recurring funding. It ended up in the budget as a one-time $250,000. So the park and the university created the learning center. Hired me as the director. And between Western's funds, that funding from the park, a later infusion of another 125 or something from Congress via the same mechanism, we managed to keep it going from 2005 to about 2015.

And we were actually a very successful, we were as successful as almost any of the base-funded research learning centers through that time, and more successful than many of them. But eventually neither Western nor the park could continue putting money through it. So, so the research learning center ended. I was hired directly by the park, first in 2013 on a term position as the research learning center director. And in '17 for a term position as cave specialist. And this year I was hired as a permanent position cave specialist.

Santucci: Okay.

Toomey: So I don't know if that's a bizarre enough answer. But fundamentally, I've been at Mammoth Cave since 2005. I was a Western Kentucky University employee from 2005 to 2013. However, my primary office was in science and resource management at Mammoth Cave. Let's see. I coordinated research permits for Mammoth Cave as a Western Kentucky University employee. (laughs) And so then in 2013 became a federal employee.

And under all three of these, the things I've been doing have largely remained the same. Coordinating research, facilitating research, and working on cave management issues.

Santucci: Very good. And so since you became a federal employee, how much if any of your time has been involved with paleontology outside of the paleontological inventory that we're involved in now?

Toomey: Oh, almost none. Three percent. Outside, outside the sudden reoccurrence of my paleontological career with sharks, almost none. In the early part of the learning center, I was

involved a little bit with some paleontology. Again, with the Illinois State Museum on some compliance work towards some of our cave trails. But again, all of that finished before I was a federal employee. Let's see. Back in the GPRA days, maybe once a year I'd have to go and check a few of our paleontological sites so we could, but there were really big problems with understanding how to apply the GPRA definitions on conditions of paleontological sites to cave sites.

Santucci: And so you and myself had a conversation back in 2019, maybe late summer, we had talked about the possibility of doing a paleontological inventory for Mammoth Cave. Do you recall that?

Toomey: Oh, yes. Yeah. We were talking about that. You had been working on, you had been working on the fossil, the temporary fossils from caves exhibits and had solicited a bunch of us, wondering about cool pictures of fossils from caves. And at Mammoth Cave, although we had that previous inventory, most of the fossils from that inventory are not incredibly photogenic. Because either they're mastodon or mammoth bone, or mastodon bone that is incredibly fragmentary, or things like a vampire bat femur which isn't very impressive. I think they're really cool. But general public don't see those as really dramatic fossils. So Rick Olson and I decided to send you our picture of shark cartilage. Because we figured you had a bunch of pictures of Pleistocene fossils in cave, but you might be lacking on well, here's what gets exposed when you erode the limestone. And we just thought that one was a nice photogenic one. And noted it and noted that you actually knew someone who was working on Mississippian shark material. And if we had good Mississippian shark material, we should probably get together and get a better handle on what it is we have. And you had asked whether we would be interested in working with that, working with you on that. And whether we could help support a project like that. And I'm incredibly glad that we said yes. Because it has been really exciting.

1:19:18

Santucci: And I remember talking to you on the phone and asking you would you be interested. And you had an extremely rapid response, quite enthusiastic, saying yes. So I'm glad that we moved forward with this venture.

Toomey: Oh, yeah.

Santucci: So I'll let you put it in your own words. So we're now embroiled in this discovery, in this paleontological resource inventory from Mammoth Cave. Frankly, I never anticipated the success, the discovery and the results that we've had so far. But from your perspective, can you share some thoughts about how this has changed the complexion of the fossil story for Mammoth Cave from what you've seen thus far?

Toomey: Oh, I mean, it is absolutely amazing. I figured we'd find out we had a shark tooth or two and that would be nice. We'd find out which species of sharks. And I never anticipated that we were going to find as many and diverse a shark fauna as we found. I never anticipated that we would have the number of different localities that we're coming up with, the diversity, the fact that we have new species of sharks. I did not anticipate that at all. I knew the shark cartilage would be interesting, but I had no idea that it was going to be cartilage from a shark that simply

we didn't previously have any idea on the non-tooth material from, so that it was going to be completely new material to science. So I was, am absolutely floored and excited. And it's going to give a lot of new things that we'll be able to share with the visitors as well. I mean, I think, I have just been completely amazed at what we're going to be able to do. And now learning how we have to handle cataloging of specimens that are staying in the cave. (laughs) I was joking with our curator about this yesterday when I was sending a note about that. It's like Carrie was saying, "Yeah, I said things to Mary Troy, and it's always something bizarre." It's like yeah, but we know what we're doing. If the question wasn't bizarre, we wouldn't need to ask it.

Santucci: Outstanding. And how do you think it's impacted some of the other staff at Mammoth Cave?

1:22:48

Toomey: Oh, we've got guides who are incredibly excited. Kelly and Chris are absolutely fascinated to be able to be included in this and bring this, the information about the fossils and the cave and the deposition to the visitors. We've got, we were able to have environmental education do some video of us collecting some of the fossils in Colossal Cave. So they're looking forward to sharing that with school kids throughout Kentucky and elsewhere. One of the benefits of, one of the benefits, we'll call it, we'll say benefits of Covid, the environmental education program has had to move most of their programing online. But this also means that they're getting requests from further away. People who they would never get to see, who would never be able to come to a cave trip where they would work with them in person, they're getting requests to work with them online. So our reach of our environmental education program is increasing a bit. So that's exciting, and they're going to be able to share with these people all this new information we're finding out about what the limestone, what the ocean looked like 330 million years ago in depositing the limestones that we get exposed in the cave. So this has been a wonderful opportunity.

It's also providing a good opportunity to revisit what we did from the Illinois State Museum and get that all summarized in one place as well. So that's a nice thing with this inventory as well.

Santucci: Excellent. And you have an event coming up where J. P. Hodnett is going to come and visit you at Mammoth Cave, I guess starting on October ninth.

Toomey: Yup.

Santucci: And you're going to be going out into the field to visit a couple of localities. And we're going to have a press release where we're going to show the new painting.

Toomey: Yup.

Santucci: What's your thoughts about the new painting and this whole event that's featuring Mammoth Cave as our National Fossil Day celebration this year?

Toomey: Oh, I think it's great that Mammoth Cave gets to be featured for National Fossil Day this year. And I think unveiling that painting is a wonderful way for people to get a sense of what

these sharks looked like and how diverse and bizarre some of these sharks are. Things that we wouldn't think of as looking like a shark today. And having J.P. here, we're looking forward to getting him into the field. We're getting things ready, we're arranging. Figuring out what sites have the highest priority. Because we're not going to get him to all of the sites we would like to get him to in this time. So we're prioritizing those. We're going to have a good time with a media event where J.P. will get to speak to some of the reporters about the wonderful finds we're having here. So we're incredibly excited to have J.P. coming and to be able to play a pivotal role in this year's National Fossil Day.

Santucci: Fantastic. Just a few miscellaneous things that I don't want to overlook while we have you on the phone. So you mentioned that you had a one-day outing at Wind Cave with Rod Horrocks.

Toomey: Yeah.

1:27:39

Santucci: Anything of interest paleontologically?

Toomey: I was just helping him check out a couple of his possible paleo sites. Some of their Badlands-style paleo sites. Not cave sites. This is just some of their surface material. And just trying to, he was trying to relocate a couple of possible sites. So I went out with him, trying to see if we could find bone shows in a couple of places where they had the right formation and so it was just a nice day out with Rod.

Santucci: Do you know what year that was? Can you recall?

Toomey: I don't. I've got to check with Rod and see if he remembers. I was in the Black Hills with the Illinois State Museum. I was in the Black Hills in summer of 2004. The funny thing on that summer of 2004, I was in Arizona. Drove through Austin, visited Ernie Lundelius. Went to Mammoth Cave and ran a Cave Research Foundation expedition. We then went up and visited family, my wife and I visited family in Ohio. Drove across. Stopped at Wind Cave and Jewel Cave and Devil's Tower. Drove over to Oregon Caves, then to Lava Beds, then down the west side of the Sierras and back to Tucson. (laughs) It was just a huge circuit year. So I don't know if it was, I don't think it was that 2004 trip. I've been to the Black Hills several times, and I just don't remember which trip it was that Rod and I went out and were looking at fossil sites.

Santucci: Very good. I interviewed Gary Morgan. And during the conversation, he was very complimentary of you during your early years, and how you accompanied him to Slaughter Canyon Cave at Carlsbad Cavern. Can you share any memories of that?

1:30:09

Toomey: Oh, yeah, yeah. That was, I had a great time on that. Gary, I had met Gary Morgan previously. But the person who actually got me involved on that was Patty Daw. She was a caver who I knew from Illinois At that point, she was living in Albuquerque and she was volunteering with Gary at the New Mexico Museum on paleontology and also caves. And she knew I was in Arizona at that point and talked to Gary and they invited me to come along and work with, Patty

had volunteered helping me at Mammoth Cave while I was at the Illinois State Museum. And knew that I worked with Mexican free-tail guano deposits. So she said, "Hey, should we see if Rick can come along?" And I mean, that was a neat cave. I really had a nice time working with Gary on that. Those deposits were something else. I mean, they are just really amazingly thick guano deposits. And it was entertaining to work in. I have to say, I didn't get to do this part with those, but I will note, guano deposits can be a real pain to screen. (laughs) They just, the organics just stick together and don't go through screens very well. So it can be really fun to screen guano deposits. And that's just a fascinating cave, too.

Santucci: Definitely. Then there's a couple of other things. You consulted with some cavers working on lava tubes in Hawaii Volcanoes National Park?

Toomey: Yes. Yes, I've looked at that material for them. I've talked to them. People like Don Koons, people like Ann and Peter Bosted, who have worked on some of those caves. I have, I've only been caving on Hawaii once in lava tubes. And none of the lava tubes I've been caving in were in the park. But I also did consult with them on paleontological resources and how they might talk to the park on dealing with paleontological resources.

Santucci: And so they were documenting paleontological resources from the lava tubes at Hawaii Volcanoes?

Toomey: They were surveying the caves and while there also documenting any resources. Including paleontological, archeological, ethnographic.

Santucci: Were any paleontological resources confirmed from the lava tubes?

Toomey: Oh, yeah. Oh, absolutely. Well, okay. This comes to a quick, a little thing on exactly what we want to call paleontological resources. There were isolated bat skeletons that I am perfectly comfortable to call paleontological whether they're a few hundred years old or a few thousand years old, especially when you don't know which of the two they might be. So I would classify those as paleontological resources. So yes, absolutely there were. And occasional bird material as well.

Santucci: Great. And then, I guess the last National Park Service area that it appears that you've been involved in is Lava Beds National Monument in California.

1:34:43

Toomey: Again, I did a little bit of inventorying material during Cave Research Foundation expedition. And what I found would be in the Cave Research Foundation expedition reports. Not much. Just noting and identifying bone material while we were doing some survey and checking out some cave entrances.

Santucci: Okay. And you had referenced in a note ice caves?

Toomey: Yeah. Looking at some of the bones in ice in some of, they've got caves with, well, it's still got permanent ice. With climate change, we'll find out how long they have permanent

ice. But some of their permanent ice actually has like mountain goat bones in the permanent ice, and you can see it in the ice. They're actually really cool.

Santucci: Very good. So, we covered a lot. And I'm very appreciative of being able to learn about these various activities that you've been involved with regarding national park fossils and caves. Is there anything that I haven't covered that you'd like to share?

Toomey: I think we've pretty much covered it.

Santucci: Okay. This has been a very useful discussion. Again, I have about a page of notes of things to follow up on. You know, I just want to say that I've known you for many years. And you're a classy guy. You bring good science, but you're a down to earth, easy to work with individual. And we're lucky to have you in the Park Service.

Toomey: Thank you. I enjoy it here. I'm having a wonderful time in the Park Service and love being able to do all sorts of strange things. Some paleo and it's nice to be able to occasionally step back into getting to do paleo, like with this shark stuff. I'm relearning sedimentary geology, even. (laughs) So it's always fun. And I've enjoyed working with you over the years. It's good to have you in that position shepherding things. For way too long, there wasn't a nice, central driving force for paleo in the park.

Santucci: Well, thanks for that. I think we have some more fun to be had with the Mammoth Cave Paleontological Resource Inventory. And again, thank you so much for allowing this project to go forward.

Toomey: Yeah.

Santucci: I think it's certainly changed things significantly for Mammoth Cave.

Toomey: I can't remember if you saw, I'm going to be taking Western Kentucky University professor and student in to start looking at what a project, looking at what the depositional environments of that J2 unit might look like. I'm taking them in on Monday.

Santucci: Fantastic.

Toomey: And I may be able to, I'm hoping at that point to grab a few slabs as well. I'll send you pictures, both for use at the media event but then eventually whether we might try acid prep or figure out what we might need to do.

Santucci: Very good. Well, thanks again, Rick. Really appreciate your time.

Toomey: No problem.

Santucci: And really enjoyed this conversation. I'll get a transcript of this to you shortly.

Toomey: Well, thank you. And I will continue to work and I'll talk to you soon on Mammoth Cave as well.

Santucci: Look forward to it. Have a nice weekend. Bye-bye.

1:39:05

[END OF INTERVIEW]