

TRANSCRIPT

INTERVIEWEE: **Merlin Tuttle** (MT)

INTERVIEWER: David Todd (DT)

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Please note that the video recording includes roughly 60 seconds of color bars and sound tone for technical settings at the outset of the recordings. Numbers mark the time codes for the VHS tape copy of the interview. "Misc." refers to various off-camera conversation or background noise, unrelated to the interview.

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DT: My name is David Todd. I'm here for the Conservation History Association of Texas. We're in Austin, Texas and it is February 23rd and we have the good fortune to be interviewing Doctor Merlin Tuttle, who's director and founder of Bat Conservation International and a noted photographer and a protector of bats and a researcher on bats from around the world. And I wanted to thank you for taking time to talk to us about your life and about the organization.

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MT: Very welcome.

DT: I thought we might start with a little better understanding of your childhood and maybe how you first got interested and exposed to the outdoors and to wildlife.

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MT: Well, my parents were avid outdoors people, nature lovers and I can remember that when I was just two years old, I caught onto the idea that I could go out and get monarch butterfly caterpillars and a bit of milkweed and bring them in and feed them in a window and they would eventually make pupas and hatch out into butterflies. And I would excitedly call my parents and everybody in the house to come watch just before a pupa was going to hatch so that they could all see it happen. And then when I was probably about four, my father was a big time shell collector and he would take me out when he was free diving with—in those days, they didn't even have snorkels—fins and goggles. And he'd strap me onto an inner tube with a pair of goggles and would have me look down and watch him dive for the shells. And so from a very young age, I was always exceedingly fascinated by

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outdoors and wildlife. I think I knew most of the scientific names of the seashells of the Hawaiian archipelago when I was five, just picking it up from being around my father.

DT: It sounds like you had a broad interest, from the butterfly cycle to the shells and I think you were also interested in toads at one point as well.

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MT: Well, I well remember—I'm not sure how old I was, probably three, maybe even two, when I caught a big *Bufo marinus*, it's a marine toad that's been introduced into Hawaii and—and wanted to bring it home with me and my parents allowed me to bring it home and find a place for it to live under the sidewalk in our backyard. And so most of my earliest recollections involve some kind of interaction with nature.

DT: And it seems like not just collecting them as pets, but you also studied them. I think I read that you kept pretty copious notes, I guess in your early teens, is that right?

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MT: By the time I was nine years old, a mammalogist named Ernest Booth came and spoke to my, probably about, fifth grade class and talked about an expedition he'd just been on to Guatemala, collecting small mammals. And I became very interested and convinced my parents to buy me a book on the mammals of California and I started corresponding with Doctor Booth and within a few months, I had learned to prepare scientific study skins of small mammals and was trading specimens with him and his museum.

DT: I've also read that not only were you collecting and studying, but you also learned how to tame and work with animals. I think that you became a sort of amateur falconry buff.

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MT: By the time I was about fourteen, I had learned to train falcons for falconry. I had—in each case, I just—I—I'm not sure how to explain it. I just went out and got a book and—and I think—National Geographic magazine played a big role. My mother would read to me out of National Geographic even when I was two and when I finally went to school, I didn't learn to read until I was in the fifth grade and nobody could figure out why an otherwise seemingly okay kid couldn't read. And the trouble was I was so embarrassed to think that anybody would have me read a Run Jick—Dick, Run, See Jane Jump book that it took until—they kept promoting me and about the fifth grade, a teacher caught on and gave me a sixth grade reader and all of a sudden found out that I was able to read fairly well. But I would like to emphasize one concern I have for the future of e—environmental leaders and understanding. I was allowed to do as a child a hundred and one things that no child

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will ever be allowed to do again. Audubon started out as a big—biggest killer of birds in—in history, maybe, shooting all these birds for art and—and scientific specimens. And I started out as a kid, trapping all kinds of small mammals and raiding hawks' nests for baby hawks and learning how to rear—hand rear them and train them and—and most of the—the—the best naturalists of all time have started out having intimate relationships with nature when they were young. Relationships that today, of necessity, are no longer legal. And I have to kind of wonder where people with a real pure appreciation of nature and understanding of how it works are going to come from when we only learn about animals on television now mostly.

DT: And in that kind of virtual, abstract sense. No hands on connection.

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MT: Right.

DT: Well, it sounds like you were maybe common then, but certainly the exception now, that you—at one point, moved to Tennessee and learned about the gray bat, is that right? Is that one of your first introductions to bats?

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MT: I lived a few miles from a cave where gray bats came every spring and fall, but they were never there for the rest of the year. I caught some, identified them in a book and the book said that this was a species that lived in the same cave year round and didn't migrate. And so I spent more than a year, carefully checking out the cave at different seasons, watching for bats to come out the entrance, collecting voucher specimens so that I could prove that I knew which bats I was dealing with. And then got my parents to take me to

the—I—I was probably about fifteen then—got my parents to take me to the Smithsonian so that I could tell the authors of the books that there was a problem with their assumption that gray bats didn't migrate, that I had found a colony that apparently did. And they were so impressed that they

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gave me several thousand bat bands and said why don't you go back and band them and see if you can figure out where they go? And so to make a long story short, I banded the bats and that ended up becoming my doctoral thesis years later when I traced their movements all the way from Florida to the Virginia-Tennessee border.

DT: Well, maybe we can jump ahead a little bit and talk about your research as you grew up and I guess you're at the University of Kansas by then, is that right?

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MT: Well, I...

DT: Working on your doctorate?

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MT: For my doctorate, I—and—for a masters and doctorate, I went to the University of Kansas. They had the best program available in mammalian behavior and ecology.

DT: Well, can you tell us about how you tracked this migration and figured out where it went and what the timing was?

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MT: Well, I have sometimes been referred to as Merlin Overkill Tuttle. I ended up banding more than forty thousand bats and, over a period of about twenty years, tracked them all over the southeastern United States. Made—I published one publication that's based on almost twenty thousand band recoveries. And I just gradually figured out the directions that bats were moving and kept—you know, like for example, there was one cave where I didn't know about the cave yet, but the public found several band—banded bats in the general vicinity and reported them to the Fish and Wildlife Service who reported back to me. And it turned out that some of those bats were coming in from southeast, some from west, some from north and it quickly implied to me that there was a hibernation site nearby because they were

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showing up there in the fall. And I did a thorough search of what was known of caves in the area, found one that seemed to have characteristics potentially useful to these bats for hibernation. And then I spent ten years going in this cave, exploring different sections, trying to figure out where the bats were that I was very convinced that they were going there. And you can imagine my excitement when one day after climbing through a seventy-five foot high pile of breakdown rocks—that was pretty dangerous, doing that on my own—I came out the bottom and crawled under a little ledge, looked up and found more than a quarter of a million hibernating bats. And, you know, of course, that's—those kinds of major discoveries are what really propels somebody into an area for the rest of their life, I think. Prior to that, I'd already gotten really lucky and found my first banded bats a hundred miles north,

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hibernating in a population of about a hundred thousand in a cave. And so both these discoveries were two of the biggest bat hibernating sites ever discovered, period. And so when you start making those kinds of discoveries and then tracking banded bats for

hundreds of miles after they were said not to migrate, that gets you pretty excited and that propelled me into what became my doctoral thesis. And along the way, I discovered that this species was in dramatic decline. Place after place I would go to, the owners of bat caves—one commercial site, they didn't want the bats scaring people that they were taking into the tour cave and they told me how they closed off the room where the bats roosted and set a big fire in there and burned them and then had to haul wheelbarrow loads of dead bats out afterwards.

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And I got those kinds of stories from many, many places where people had done maybe not that bad, but all of them trying to get rid of bats. And about that time, the health department in Tennessee put out a bunch of publicity claiming that bats were mostly rabid and—and going to give people rabies. And—and one of the owners of one of my study caves actually went out and set fire to his bat cave and he'd been told by the state that the bats were rabid and he was lucky his family hadn't gotten rabies yet. When I came back and asked him, for how many years have you lived here? How many generations of your family have lived here? And how many times were they attacked by bats or harmed in any way by bats? And he ended up literally in tears at what he had done. But having those kinds of

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experiences was a very powerful motivator to, not necessarily make me think I would ever found a conservation organization, but to make me deeply concerned about conservation.

And I began by just talking to individual cave owners to try to convince them to protect their bats instead of harm them. And one of my favorite stories is with a guy named Hoyt Bias, who owned a cave up in northeastern Tennessee and when I went there to ask him if I could study his bats, he assumed that when scientists studied bats, they killed them all and took them home. And so he said oh, he would be happy to have me study m—his bats and kill them all if I got a chance. And you know, in—in those days, people pretty much thought bats were rabid and dangerous and—and it wasn't going to do him any good to tell him that these bats were endangered and that it was illegal to kill them. But what I did was

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went in and under his bat roost, I picked up a handful of potato beetle wings—he was growing a big crop of potatoes out in front—and then when I came out, I'd just pretend to be a little naïve and said, you know, I'm really interested in finding out what these bats eat. Can you tell me what these—these wings are? And he looks and sputters a bit, well, the blankety-blank, I'll be damned. Potato bugs. And them suckahs eat potato bugs? And so I said yeah, they apparently do. The roost was all covered, the floor under where they roosted, with these wings and—and incidentally, they don't just eat potato bugs. These bats eat moths. I see you've got some corn over there, the corn earworms are a moth that—that gets into your corn is eaten by bats and—and mosquitoes and other things. And—and I didn't go into any great detail, but the next time I came back a few weeks later, he had decided that

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each one of his bats was worth at least five dollars and that meant his fifty thousand bats were worth an awful lot of money. And by George, anybody that came there monkeying with his bats was going to be in big trouble. And I never talked to him about an Endangered Species Act or the fact that bats are likable animals or anything. You know, in those days, my conservation effort was strictly boiled down to like them or not, you need them. But if

you understood them, you'd also like them. And so it was those early experiences that led to founding Bat Conservation International. I was deeply concerned. My own data documented this species was in such precipitous decline that the leading authorities of the time predicted that this species would soon become extinct. And one of my proudest accomplishments with Bat Conservation International is that today, that species has recovered so well based on our education and protection campaigns that it is now a species that, although it was predicted to become extinct, there are millions more than when it's extinction was predicted and we're ready to de-list it from endangered status.

DT: Good news. You've mentioned, BCI, Bat Conservation International. Maybe you can take us to—I guess you were at the Milwaukee Public Museum, is that correct, when you started BCI. What were you doing at the museum? How did you get there and how did you decide to actually start...?

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MT: Well, there are some big gaps here in the story. Before I went to graduate school, I was employed by the Smithsonian Institution and the American Museum of Natural History as a field collector of mammals. And back in those days, if you wanted to be a mammalogist, you mostly collected specimens for museums. And I was fairly famous as a collector. There are tens of thousands of bats and other mammals from jaguars and tapirs to shrews that I collected for museums in my college years. And so...

DT: Well, since you're on that, why don't you tell us about some of the collecting trips that stand out in your mind?

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MT: Well, I led major expeditions for the Smithsonian in Venezuela for two years and I had the great good fortune and fun of being able to take my expeditions where I wanted them. And so I took them to all the farthest out, most unreachable places that nobody else wanted to go and, in fact, I spent a whole year literally living with cannibal Indians while we worked for the Smithsonian. And as a result of all that work, I got highly recommended by the head of the mammal section of the Smithsonian when I finished graduate school for a museum job. He claimed that send Merlin Tuttle into the jungle to collect and it's like sending in a giant vacuum cleaner, nothing escapes him. Not quite the image that I have now as a

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conservationist, but I—I had a conscience in—in all times that I never collected enough specimens from any colony or population to threaten its future. But we did collect something like five—ten or fifteen thousand specimens a year. And...

DT: And this is all different kinds of fauna but also—or flora?

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MT: Mostly bats.

DT: Bats.

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MT: Well, mostly mammals. And so when I finished graduate school, it was obvious—I was an obvious candidate for a museum position because I was well established in my ability to build collections. But after I was hired, by that time, even though I had the reputation as a great collector, I was more interested in ecology and behavior and started doing behavioral research. And I was good enough at it and brought in money to support it well enough that I was allowed to kind of develop my own career at the museum and not do what I was hired

to do, but do other things that made the museum famous. And you know, if the institution you work for takes in more money because you're there than it costs to keep you employed and you go out and make good publicity for them, you get a pretty free

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ticket as to what you're going to do. So for eleven years at the museum, Milwaukee Public Museum, I had free license to spend six to eight months of my year in Africa or South America or Asia or the—Australia or other places. And it was during that time...

DT: And this is 1974 to '85 or so?

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MT: 1974 to '80—early '86. And so I had pretty much free license and in '82, I founded Bat Conservation International because I became so appalled at—here I had this ability to travel anywhere in the world and do research and, everywhere I went, people were killing bats in large numbers just out of ignorance. For example, when I went to Thailand and photographed bats pollinating durian flowers, the durian farmers immediately wanted to know how to kill the bats because they said they damaged their crops something terribly. I asked them how that could be and they said well, you know, just look. Minutes after the bats come into the orchards at night, all the flower petals are falling to the ground. Well, it turns out that the durian flower is very—the durian tree and bats are very co adapted so that, although the

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tree produces thousands of flowers in a night, the bats know which ones to go to that haven't been pollinated yet because each flower that's been successfully pollinated drops its petals. And so all those petals on the ground were proving to me that the bats had successfully pollinated the farmer's next crop, and yet to him, it was proof that he was suffering greatly. And so I found those kinds of misconceptions all over the world. I had one cave owner in Africa, he had owned a wonderful bat cave with hundreds of thousands of bats in it and he bulldozed it shut. I asked him why he had done that and he said that it was because people warned him that if he didn't get rid of the bats and he built a home nearby, the bats would all come try to live in his home. The bats that lived in that cave wouldn't have ever—you couldn't have induced them to live in his home and yet they were bats that could've been a huge boon to him in controlling insect pests in his yard. So I

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would see things like this, just total misconceptions, going clear back to the rabies issue in Tennessee. Nobody has ever gotten rabies from a gray bat. Never. And yet people were destroying gray bat caves right and left out of fear of rabies. And so through this eleven years of being a researcher at the Milwaukee Public Museum, I had a lot of opportunities most people will never have to travel the world and see what the values of bats were, to see what the misconceptions were and I started speaking out more and more. And I first went to the existing traditional organizations, conservation organizations that I, in fact, belonged to—World Wildlife, Nature Conservancy and any other one that would listen. And in those days, it was a really rough road to hoe to try to convince any major organization to conserve bats. Bats, in a popularity poll run by major wildlife organization in America, showed that

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they ranked right between rattlesnakes and cockroaches. And so the big organizations want nothing to do with anything that unpopular. And as a scientist, it bothered me terribly

that you couldn't spend at least two percent, three percent, maybe five percent of your budget educating people about things that were extremely valuable but not yet popular. And I tried repeatedly to get the traditional organizations to do things for bats and was repeatedly rebuffed. And finally one day I was giving a talk to a group of little old ladies that supported the museum and I was talking about how valuable bats were and yet how dire their conservation needs were and one of the ladies came up afterwards and said if you would found a nonprofit organization, some of us would try to help you. And so that was kind of a

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novel idea to me as a c—scientist. I had never had any idea of founding my own organization and even when I was a little kid, I'd always talked about that the one thing I didn't want to do is to be a bureaucrat. And I thought anybody that led a business or managed people was a bureaucrat and I was never going to be a bureaucrat. And so when I founded Bat Conservation International, I had a goal no bigger than to hire a half time secretary who would help me produce some printed material and distribute it to people that were interested and try to just start a little bit of an education campaign. But soon after I did that, the Wall Street Journal called and wanted to do an interview with me and I'd just had a cover story in the Scientific Journal of Science and an article in National Geographic based on my research and Wall Street Journal wanted to feature my research. And I said you

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know, my research has already been featured. Why do that when there's such a neat story here about why an otherwise seemingly common sense scientist would found a conservation organization for the least popular animals on the planet? And so they went ahead and did a front page story on why I founded Bat Conservation International and within a week, the Chairman of the Board of the oldest PR firm in America had called me and said you know, I'm really intrigued with ultimate challenges and it seems like you've got an ultimate PR challenge. I'm going to be going out in a couple weeks to consult with Lee Iacocca on a project and I'd be happy to stop by Milwaukee and talk to you about what you're trying to do. And so he became a very influential early leader at BCI and, in fact, some of his advice sticks even to this day and makes a huge impact on our success. He—he warned

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me, he said—he said conservation organizations tend to be gloom and doom and always threatening people with what's going to happen to them if they don't take immediate action to save something. And he said you—you can't be gloom and doom. People are going to just shut you out if you just tell them about all the bad things that are going to happen in the world. Tell them only about the bad things that will—that they can do something about. And then when they do something about it, make them feel really good about having prevented something that would've happened without their intervention. And so if you look, even twenty-five years later today, at our member magazine, Bats, you'll find that the stories are

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about—they're—they're happy stories. They're about all the incredible things that are—that are—the progress being made because of our members' assistance. And we just don't tell members about things that they can't help with. Why upset you at evening when—

when you're trying to get ready to go to bed with some gloom and doom story? And so that's been a really important part of—of our success is that we've always stayed positive. Bats have been the ultimate underdog and, of course, every American likes the underdog, you know. I like to watch football games and if I don't know who to root for, I root for the underdog. And so Bat Conservation International has been kind of an ultimate underdog. If you gave money to help save bald eagles and you went to your next party and talked about that, everybody would politely say oh, that's real nice and go back to talking about what they were

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already talking about. You have no—no audience for talking about that you helped save something popular. But if you help save a bat cave, you immediately had everybody say what? Aren't they all rabid? What do you do that for? And—and then you've got everybody's attention. So in a way, being the ultimate underdog was something that I was able to turn to the advantage in getting media attention. In fact, BCI was built originally on media attention, where each time we were in the media, we would try to get something in there about how to join BCI or how to get back to us for more information or how to come to us to learn how to build bat houses. And we never, ever tried to do what I consider very wasteful mass mailings and that type of thing to promote ourselves.

DT: Well, maybe you can tell us about this appeal that bats have, and continue to have, I suppose, as the underdog, the underappreciated, the misunderstood. Where did these myths and misconceptions come from? Can you give some ideas of the sources of why people didn't understand the important roles they play?

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MT: People fear most what they understand least. Bats are nocturnal. They live in, often, places that the people are a little spooky—caves, attics, old abandoned mines, you know. And even if you're a human, if you're employed in a job that takes you out at night, you are far more suspect in your motives than if you have the same job doing it in the daytime. And so bats, just by virtue of being active at night, small, living in places where people don't understand them very well, are easily misunderstood and feared. The irony is that where bats are the biggest and people have a hard time understanding that the world's biggest bats have wingspans that can exceed six feet; those really big bats with three to six foot wingspans are not feared. They're eulogized as folk heroes. It's always the little bats that people have a hard time seeing and understanding that are the most feared. So it's just a matter

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of fear of the unknown, but through photography, I was able to make a big dent on the unknown part of the equation. In 1978, National Geographic—this is actually—I'll just start that over. In 1978, National Geographic asked me to write a book chapter on bats for a new book they had coming out, Wild Animals of North America. I wrote the chapter and then they asked me to come to D.C. to look over the pictures that they had found that they were going to put with my chapter. And I was horrified. All of the pictures were of tormented, snarling bats. You take a little bat with a head the size of my thumb or even smaller, torment him until he s—snarls and then take a picture and blow that up to page size and it looks like they're all little saber tooth tigers going around about to eat somebody. And the

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problem was people had no idea how to deal with bats and the bat, as soon as he was

caught, would hunker down and close his eyes. That wasn't a very interesting picture, so they'd poke him in the face until he opened his eyes and snarled and that made a more interesting picture. So I s—I had written—my whole chapter was about the benefits of bats and what really neat animals they were and I said you can't put those kind of pictures with my chapter. It'll undo everything I've said. They agreed. They said—you know, I said you wouldn't have pictures of snarling, tormented chipmunks in there. And so they sent one of their staff photographers, Bates Littlehales, out to the field with me for six weeks to get some good pictures of bats. But good pictures of bats are difficult to come by and, in six weeks, he only

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came up with three pictures that he really liked for my chapter and we needed a lot more. But in that three weeks, he could hardly go to the bathroom without me asking him how and why and so, at the end of three weeks, he realized that I—or six weeks, he realized that I had learned a great deal about photography from him. He handed over the rest of his film and said why don't you see what you can do? A good share of this seems to be knowing what the bat's going to do next and you already know the photography side now. And so I took his film and started taking pictures and the I—short of it is that I became the second most used photographer in the book. And that was the beginning of a giant turnaround for public perceptions of bats.

DT: Maybe you can talk a little bit about the how and the why of photography. I understand that part of the skill is, of course, in using the camera and the strobe and the lighting, but it's also in that you've been able to, in a sense, train these bats to move in ways that you can predict and work with. Maybe you can talk about both angles.

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MT: What I've done photographically could not have been done without my scientific background and knowledge. It couldn't have even been done if I hadn't had the wide access to understanding animal behavior that I had as a child when I was able at age fifteen to train hawks for falconry. Learning to train hawks for falconry was a key step. Learning about bat behavior and ecology was another key step. Learning photography was just the final little bit that took after the major work had been learned. And so the pictures that I have used to educate people about bats are absolutely authentic in terms of showing what the bats really do out in the wild, but most of those pictures, if you see a close up picture of a bat hovering, pollinating a flower or catching a frog or doing something else, you can be quite sure

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that that studio lighting I have can't be set up in the wild. Those bats have been captured, tamed, brought into my studio. I can tame an average wild, full grown bat within two to three hours to come on call to my hand and to go where he's asked to go on command. And it's—it's absolutely unbelievable how quickly these bats can be tamed and how much they can be taught. And so by learning to train animals, which started with falconry, and then carried over to bats, I would've never thought that bats—in fact, right here in Texas, we have a—one of the country's smallest bats, the little Western pipistrelle, it's about that big. I had one of those in my studio one day on a trip out to Big Bend and I was thinking that that little bat couldn't be trained; it was just too small and obviously didn't have that kind of intelligence. So I was training a bigger bat to come and catch scorpions where I wanted them—the—pallid bats eat scorpions in the wild and—and I wanted pictures of them

catching scorpions.

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So while I was training the bigger bat, first I train them to come on hand—come on call to my hand, the little bat was just in my studio, watching, and I was only planning to take some portraits of him later and wasn't planning to try to train him. Later, when the bigger bat got full and decided not to respond one time, the little bat flew over and got the big bat's reward out of my hand when I called. So I've been absolutely amazed over time with how intelligent bats are and how much you can train them. And it's been my mastery of bat training that has been much more important than my mastery of photography when it came to getting great pictures. And those pictures have contributed tremendously to the progress of public education, understanding, appreciation of bats.

DT: So once you've trained one of these bats to come to your call or come to a lure, how would you set up a typical photo shoot?

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MT: Well, for example, in—for my 1986 National Geographic article, I went to the Gulf Kakamega Resort in Kenya, rented three rooms—one for my African assistants, one for myself and one for my bats. I asked them to take all the furniture out of the room for the bats. I brought in my studio, set it up and, of course, a lot of these places, they're very skeptical when you tell them you want to move all the furniture out for your bats. And so I'd always carry a copy of my previous, most recent National Geographic article and once I'd tell them it was for National Geographic, it was like magic. Oh, we'll take out a wall if you need, if it's for National Geographic. And so I had this big walk in military mosquito net enclosure that I could put up in a room and put background material on the side so that you couldn't tell that I was in the enclosure instead of out in the wild. And then

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I would—in that case, I caught about a dozen bats and it took me about two days to get them all tamed and trained where they would come to me on call or I could go pick them up and do whatever I wanted with them—move them around, perch them where I wanted them and they're, you know, en—actually enjoyed interacting with me. And so after I did that, then most of the pictures for the article were relatively easy once the bats were trained and—and I could build my own sets in—in captivity. But even for that article, there was one anchoring picture that showed a male courting with a female coming up to him—these epauletted bats, the males have big white fluffy epaulettes of fur that they flash and singing up in the treetops at night to

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attract females. And I found out that the males were guarding streetlamps in a town and so I set up under a streetlamp to get pictures of this male, thirty feet up in the trees, courting. And it was horrendous because everything had to be preset, framed and focused and everything and the trees would keep blowing around and so the bat might be moving two feet as the tr—wind blew the trees. And as the female would come to hover in front of the male, even if you got what seemed to be the perfect shot, you may have gotten—or the—her wing was over her or his face instead of where you could see their faces. And I took six hundred and fifty some pictures in all night stints to get that anchoring shot and when I got home, you can imagine how I felt as I sorted through the six hundred and fortieth and still didn't have my perfect picture. Fortunately, I got it at about the six fiftieth. [Laughs]

DT: So some of these shots were actually taken outdoors in a...

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MT: Oh, yes. At great...

(misc.)

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MT: And eventually I learned to train those bats outdoors without catching them.

DT: Can you tell us, maybe in lay terms, some of the equipment that you used? I imagine you had a strobe or some sort of bright flash to...

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MT: I had very powerful, high speed strobes and those are more significant than which camera I used. I've typically used Canon cameras, but that's because Canon's been very nice to me in my conservation work and produced—and they have good equipment. But the strobes are most important. But back then, I didn't have any of the modern high speed strobes that you can get now. I was using old Vivitar 283 strobes with the power dialed down to where they hardly had any power left and you had to hold them almost in the bat's face to take a picture. But I'd get the bats acclimated so that they weren't worried about what I was doing.

DT: Well, and—and I guess this was all—I mean, in part, it had to be aesthetically pleasing, but it was for education.

00:43:08 – 2400

MT: Yeah.

DT: And maybe you can tell us how you used this either for exhibits or for magazine articles? How did you put these photographs out there before the public?

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MT: The highest paid people on the planet seem to be entertainers. I caught on real quickly that if I wanted to raise money for bats, if I wanted to sell bats in terms of getting people to like them and conserve them, I needed to be a very good entertainer. And so I put together a smashing set of slides and when I start a typical talk, the first slides you see are of bats—now it's Power Point—but the first images you see of bats are bats are just cute as can be. Just as cute as any puppy or kitten anybody ever had at home. And that totally just blows away their preconceptions that bats are ugly, you know. Well, I could like bats if they weren't so ugly. And so once you hit them with those pictures, then they're already having to accept that their preconceptions are largely wrong. And then I go through a quick series of a half a dozen or so pictures that just show everything from bats as strange as

00:44:31 – 2400

dinosaurs to beautiful, colorful bats to really funny bats and—and by the time you've gone through that first, only about two and a half minutes of my talk, you're already aware that what you thought you knew about bats was mostly wrong and so your mind is an open page, ready to learn what bats are really about. And then I go through and very methodically illustrate how and why and when bats are important to healthy ecosystems and human economies. And I've always sold bats on the idea that we need them, like them or not. And I've never—I'm sorry, I'm going to just stop there a second.

(misc.)

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MT: When I founded Bat Conservation International, most people would've far rather paid to kill a bat than to save one. When you start out like that, you can't go around just fighting with everybody who disagrees with you. You're going to get nowhere. And so of necessity, I

had to adopt an approach that you may be an enemy of bats now but that's just because you don't know what I know and if—if you learn about bats, you'll change your mind. And so I don't know any enemies of bats. I know lots of people who've done things that they probably will someday really regret when they understand bats better. But I don't know any enemies of bats, I just know people who haven't been educated yet. And so Bat Conservation International has never been confrontational about changing attitudes. I'm going to change your attitude by just plain wowing your socks off with bat facts. I'm not
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going to change your attitudes by telling you how terrible what you've done in the past is, to kill them or that type of thing. And, in fact, just three days ago, I met with the Ag Commissioner for the Cayman Islands and he had his staff had been asked to meet with me to talk about the need for bat conservation there. And they all sat down with the looks on their face said we know this is going to be the most boring thing we've ever done. Just get on with it, we have to be here and we'd like to be elsewhere quickly. So I just hit them with some really rapid fire like you catch kids, you know, before they squirm, and—and then got straight to the meat of the things they're interested in. And took about fifteen minutes to really get through to them and convince them this is something they should pay attention to. But I

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almost couldn't get away to get to my next meeting because these guys were so interested then, just really excitedly asking good, sound questions about how bats fit into the health of their agricultural system.

DT: Well, maybe this would be a good time to talk about how bats do have an important economic role. I think you touched on the first example you had back in Tennessee, I think it was, where the fellow's growing potatoes. He didn't realize that the bats ate potato pests. Maybe there are other examples of pollination or pest control that you could suggest.

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MT: Well, let me just start that over again. You don't want to start on well. I think I can make as strong or stronger a case for the ecological and economic values of bats than anybody can make for any other group of animals on the planet. Let's start with the fact that bats are all—comprise almost a quarter of all the mammal species. There are more than eleven hundred species. They're found everywhere but the most extreme desert and polar regions and they play key roles. They've been here since the age of dinosaurs. Prior to the advent of modern European settlers in America, they filled our night skies on a par with passenger pigeons. And having been around so long and in such large numbers, such a successful group, they have come to play extraordinarily important ecological roles. Here in Texas, the bats from Bracken Cave alone eat two hundred tons of insects a night. The bats—just one of our thirty-some species of bats from the State of Texas eats over a
00:49:29 – 2400

hundred tons of insects a night in the hill country alone. And we now know that a large proportion of those insects are crop pests. Not just any crop pest, but the most costly crop pest in the State of Texas. Anyone who's ever tried to go—grow corn, cotton or even harvest pastureland for hay knows just how costly corn earworm and army worm moths can be, not to mention cucumber beetles. These are all pests that bats prey on and, at times, prey on very heavily. Our free tail bats from Bracken Cave have been shown on Doppler weather radar to head straight out for the Texas agricultural winter basket area where the

crop pests are coming up the most numerously. And in the spring, they do something that's extraordinarily important. Here in Texas, we have vast migrations of literally billions of army worm and corn earworm moths that migrate into our state from Mexico and Central
00:50:41 - 2400

America. These moths, the females are carrying up to a thousand eggs each. Just one bat catching twenty of those months can prevent up to twenty thousand eggs from being laid. That is more than enough to prevent a Texas farmer from having to spray two acres of cotton with pesticides. Now if one bat can have that impact, just think of the impact of—of the twenty million that we now own and protect, or protect in Bracken Cave, a group that eats two hundred tons a night. We're talking about twenty moths can mean twenty thousand eggs for a Texas farmer that would become—that would attack cotton. Cotton's the big crop that—that is—that these moths attack so badly. But these corn earworm moths attack everything from corn,
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cotton, tomatoes, pumpkins, you name it. They're a billion dollar a year pest in the United States and there's now solid scientific documentation, which was initially funded—the research through Bat Conservation International has now taken on a much bigger scope funded by the National Science Foundation and other major entities. This research has clearly documented that our free tail bats in the central Texas hill country alone are worth, in an average year, close to a million dollars to the cotton industry, which is a five million dollar industry annually. So we're talking a very big chunk of that industry's economic health is coming from the bats. And that's not considering all the good the bats do at preventing these moths from attacking other crops in the state. When we get the true final figures, we're going to be in awe of just how important those bats are.

DT: Maybe there's another role that bats play that you could talk some about. I understand that they have a key role in pollination in some of the areas in Mexico. Could you talk some about that?

00:53:20 - 2400

MT: Bats that pol—all right. Bats that pollinate flowers and disperse seeds perform a whole 'nother set of critical functions from the subtropics to the tropics. Starting in Texas and Arizona and New Mexico and going all the way down to the far end of Peru, these bats play critical roles in sustaining whole ecosystems. You take the Sonoran Desert that starts in New Mexico and—and Arizona, this desert—I'm going to start over again. Bats that pollinate flowers and disperse seeds are absolutely critical, both ecologically and economically, throughout the world's tropical and subtropical regions. Take the Sonoran Desert of Arizona that extends down through New Mex—through o—Mexico. Most of our giant columnar cacti, the famous ones for example—organ pipe, saguaro, cardon—those are heavily reliant on bats as their primary pollinators and seed dispersers, both. And there are—I have no idea

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how many dozens of the—of species of the giant cacti that go all the way from Arizona to the south end of Peru that are bat dependent, and even out in the Caribbean Islands that are primarily reliant on bats as their pollinators, and often, as their seed dispersers. And then take the agave plant. The agave is highly dependent upon bats in many cases for seed—for pollination. The agave is highly dependent upon bats in many cases for pollination. In fact, the agave, from which all tequila is produced, is heavily reliant on bats

as its primary pollinators. There are probably approaching a hundred species of these plants that are, to some extent, bat dependent. So if you take the agaves and the giant columnar cacti out of desert

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ecosystems from Arizona to Chile, you dramatically, dramatically threaten those ecosystems—in fact, you basically destroy them because agaves and giant columnar cacti are the backbone plants that support those whole ecological communities. And then if you go a little farther south into Central and South American rainforests, these rainforests are the lungs of our planet. They're the rainmakers. They—they have huge impact on what happens in the rest of the world. They're—we don't live independently of those rainforests. We hear about all the wonderful life forms and everything in them, but—but literally our—our rain and oxygen and a lot of other things might not be there for us if we didn't have rainforests. And in these new world rainforests, half of the mammal species, approximately, are bats and they play

00:56:42 – 2400

really important roles as pollinators and seed dispersers. Just one small colony of bats, just one species—I'm sorry, I'm going to start that over. Just one small colony of Corolia bats, for example, can disperse enough seeds over a period of a year that if only one percent of them fall where they can germinate to become new seedlings, this one little colony of maybe a hundred of these bats would produce a hundred thousand new tree seedlings annually. It's a hugely important contribution. Go all the way to East African savannas and you'll find that the baobab tree is heavily reliant on bats as its primary pollinators and the baobab is so important ecologically that it's referred to oftentimes as the African tree of life. And then you go to Southeast Asia and Australia and you'll find that everything from the most ec—the

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most economically important food plant of Southeast Asia's is probably the durian. It's worth hundreds of millions a year in sales and yet it is heavily reliant on bats as its primary pollinators. All bananas in the world that we use commercially come from progenitor banana species that rely on bats as their primary pollinators and often seed dispersers. If you go to an average tropical fruit market, you'll find that seventy percent of the fruits on sale are coming from plants that in the wild rely on bats as their primary pollinators or seed dispersers. In fact, the list is almost endless. It's everything from bananas and plantain to jackfruit, breadfruit, papayas, mangoes, peaches, avocados, dates, figs, cashews—it's an almost endless list. So if

00:58:49 – 2400

you took bats out of the world equation, you could be minus some of your most successful controllers of night flying insects that harm our forests and crops. And you could be minus critically important dispersers and pollinators of economically valuable plants, not to mention ecologically valuable.

(misc.)

[End of Tape 2400]

00:01:21 – 2401

..they're huge bat conservation (inaudible). I work—you know, it's—it's a lot of fun to talk about what we've achieved and how almost miraculous it's been to achieve so much for something so difficult, but we're not even cutting the surface of what needs to be done. I

mean, every day, somewhere in the world there's probably huge numbers of bats being destroyed that may never be replaced if—you know, like when their caves are dynamited and that kind of thing.

DT: Maybe this would be a good chance to talk about the organization that you helped put together, founded, of course, to try to address some of these economic and ecological needs as well as the conservation pressures that you saw back in '82. And then in '86, as the group matured, you made a major move to Austin and established yourself here where you've been succeeding twenty-two years now. What brought you to Austin and what have you seen...

00:02:29 - 2401

MT: We're on—we're on—we're on tape now, right?

DT: Yes.

00:02:31 - 2401

MT: Okay. I—I just was daydreaming, not paying attention.

DT: So maybe you can take us from that sort of formative time when you moved BCI down here to Austin and what brought you here and what are some of the accomplishments that you've had since moving here?

00:02:48 - 2401

MT: By 198—here, let me—by 1986, Bat Conservation International had taken off and grown to the extent that it was obvious to me that I could not continue to be a full time curator of mammals to the Milwaukee Museum and do what I wanted to do for Bat Conservation. At that time, huge numbers of bats were moving into the remodeled Congress Avenue Bridge in Austin and they were making national and international news, as one headline literally said that hundreds of thousands of rabid bats were invading and attacking the citizens of Austin. And even the Austin American Statesman was running stories like Bat Colonies Sink Teeth Into City. And I decided that any city that had that many bats and that many news media with nothing better to do than talk about them would be an ideal location to center a bat conservation education effort. And so partly for that reason and partly because I

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wanted to be associated with a major academic institution where I had access to good libraries and s—fellow scientists, I moved Bat Conservation International to Austin. And at the time we arrived, health author—authorities had—I'm going to start that over. At the time we arrived—at—at the time we arrived, health authorities had warned citizens of Austin that these bats were rabid and would attack and were a serious public health threat and people were a bit frightened of that. They were signing petitions to have the bats eradicated. Excuse me. Where do you want me to start that up, I belched in the middle of it. (misc.)

00:04:50 - 2401

MT: An—and understandably, people were frightened and were signing petitions to have the bats eradicated. I began educating leading citizens in Austin and leading media commentators and writers and pointed out that these bats were very unlikely to ever attack or harm anybody, that if we simply left them alone, there were many advantages to living in harmony with them. And it didn't take as long as most people think to, once we'd convinced leading citizens and leading media people, that word spread to the populace and quickly people began to l—get over their fears and to appreciate the values of bats. We

have now the perfect demonstration of bats being able to live very harmoniously and safely with people. For twenty-five

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years, we've had a million and a half Mexican free tailed bats living under the Congress Avenue Bridge in downtown Austin and after all those dire predictions that the bats were rabid and going to harm anybody, we're still twenty-five years later waiting for the first person to be attacked or harmed by a bat. And yet, in that same period, the bats have attracted literally millions of tourists. Those tourists spend eleven million dollars a summer—I'm sorry, I'm going to go back. Those—those tourists spend approximately ten million dollars a summer in downtown Austin and the bats eat thirty thousand pounds of insects every night. So where is the harm and where is the benefit? It seems to be that the net is on the side of welcoming the bats as wonderful allies in Austin.

DT: I think the example of the Congress Avenue Bridge brings up a neat venture that BCI has been involved in for a number of years that has natural habitat of caves and rotten trees, maybe become more rare. It seems that many bats were forming colonies in built structures, whether it's a bridge or a bat house and I was wondering if you could talk about BCI's efforts to expand on that and make that kind of habitat more available.

00:07:36 – 2401

MT: Bats, like all other animals, are losing habitat. But bats have lost habitat even more rapidly than most because they're highly specialized and, for example, the twenty million bats that live in Bracken Cave, it would be hard to find alternative roosts for them if suddenly the cave was destroyed. And yet, Austin itself is built on top of caves that once housed hundreds of thousands or even millions of bats and these bats have lost their homes. The only way to replace those bats is to build artificial homes or allow them to use places like the Congress Avenue Bridge and I'm delighted to report that here in Texas, the Department of Transportation now just almost automatically when they're in agricultural areas, if they design a new box beam bridge will set the box beams about an inch apart so that the bats can use them and roost in there. And we now have millions of bats living in bridges, not just

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in the Austin Congress Avenue Bridge, here in Texas because of collaboration with the Department of Transportation. We also help homeowners and ranch owners to build their own roosts. Backyard bat houses are working very well in Texas and over much of America. There are hundreds of thousands of bats today living in backyard bat houses and other artificial roosts that we've designed. It's important to point out that these roosts also play a very crucial educational role. People get to know bats and understand them through their backyard bat houses. The most successful bat houses that I personally de—designed range from David Bamberger's bat house out on his ranch near Johnson City that—that houses, I'm not sure how many bats, maybe a hundred thousand or more not, to a bat house at the University of Florida in Gainesville that houses over a hundred thousand bats.

DT: Maybe you can tell a little bit about David Bamberger's artificial bat cave. How is that designed and how is it built and how was it originally colonized?

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MT: Well, David Bamberger didn't have any bat—didn't have any caves on his ranch, but he wanted a bat cave and I said well, there's no reason why you couldn't build one. Bats have occupied numerous abandoned mines. It's not inconceivable that you could design a really

good bat cave that could house hundreds of thousands of bats. And so he hired an engineer who got his basic advice from me and Bat Conservation International on what the bats would want and then designed a structure that would meet those criteria. And it took several years to be completely successful but he now has a very nice breeding colony of Mexican free tailed bats. And the University of Florida took several years to be successful also but they now have a nice breeding colony of bats and they're very, very popular.

DT: And this was some sort of a concrete structure that was built there or how was it made? The one at Bamberger's ranch.

00:11:07 – 2401

MT: David Bamberger's is built kind of like a dome house. The same basic principles with a lot of reinforced steel. He dug back into a natural hollow and then built the structure out of concrete with a lot of rebar and gunite and then filled back over the top with earth so that it would be like a natural cave.

DT: You mentioned there are also these backyard bat houses. What sort of size and materials and design do they have?

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MT: We offer a wide variety of backyard bat houses and plans for building them. One of the more successful things we've ever done is produced the Bat House Builder's Handbook, which that and my America's Neighborhood Bats book are two of the top, I believe, five or six bestsellers at the UT Press.

DT: Some of these designs are developed here, but then is there also—are there bat house inventors out there that you collaborate with?

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MT: The most successful single bat house type I know of in America today is built by a former Texas highway patrol officer. When we retired, he came to me and asked about building plastic bat houses. He said the wooden ones eventually deteriorated and were heavy to put up and he had this idea of building plastic ones. I told him I didn't think plastic ones would work, that they would probably get too hot and cold, change temperature too rapidly for the bats. But he kept insisting that this would be a wonderful thing if it did work. And so I had him come down one day and I spent some time designing a house that would have vents so that it could heat up quickly but then certain parts of it would cool off and vent the heat. And he went and built these and they're very, very successful.

DT: Are there other ways that ya'll have worked to protect natural habitat? I understand that there is this very significant bat cave at Bracken. Can you tell the story about how you managed to cobble together not only the cave itself, but enough of a buffer around that cave to keep that protected in perpetuity?

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MT: Bracken Cave houses the largest remaining bat colony in the world, twenty million, and that's literally two hundred and seventy tons of bats. It was at one point very much endangered. If you go back far enough into the 1950s, the—the U.S. Air Force actually wanted to gain permission from the owners to fly over and bomb it shut because it was viewed as a hazard to aircraft. The jet trainers were flying in the evenings and running into bats and causing expensive damage to engines. But the owners fortunately valued their bats and didn't allow that to happen and today those same people have sold their property to Bat Conservation International and we have over a—about a fifteen year period put together a seven hundred acre nature reserve, which in itself is a small miracle because we

started out just able to b—obtain five acres around the cave. And you got to remember, this is only twenty

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miles from the dead center of San Antonio and to put a—together a seven hundred acre nature reserve in that kind of real estate value is no small challenge. But it's something that—you know, I've found that once you document the importance of something, there are a lot of people around who will pitch in and help save it. One of the problems that conservationists have is so often they love the animals and they tell you that you really need to save them because they're endangered and they have rights and all these things. But basically, as far as I'm concerned as a scientist, I'd much rather sell saving a site like Bracken Cave based on its economic and ecological value. The fact that it's critical to a healthy environment in Texas, that saving that one cave can impact thousands of square miles around the cave that the bats have impact on every night as they feed.

DT: One of the things that I think Bracken Cave is known for is this sort of spectacular—I think they call it an emergence? Can you try to describe that, what it's like?

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MT: The bat emergences from Bracken Cave are among the most spectacular wildlife events on the planet. Up to two hours before sundown, huge colonies can be seen. You can see them if you got binoculars probably for up to two miles, certainly up to a mile, as they emerge from the cave. They have to come out early because before their dawn return, they're going to eat two hundred tons of insects. And this is the type of wildlife spectacle that people usually have to spend many thousands of dollars and travel to Africa or someplace to see and yet we have it right here in our backyard.

DT: One of the things that you're known for is guiding people that are curious about nature but that don't have the training or knowledge about nature firsthand and you've taken many groups to Latin American and certainly parts of Texas. Can you talk about some of these trips and maybe some memories that stand out in those trips?

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MT: Well, one of the things we do for our major donors at Bat Conservation International, we have what we call a Founder's Circle and anybody who gives a thousand dollars or more a year automatically belongs to the Founder's Circle. Those people get special announcements once a year of trips that I personally lead to really exceptionally rich bat faunal areas where we introduce them to why bats are important and the diversity of bats. And we do a lot more than just see bats. For example, we just came back from Australia and New Zealand where the group I led did everything from dive the Great Barrier Reef to go out and watch koalas and everything else that people normally would expect to see in Australia, but in

00:17:46 – 2401

addition, they go out at night and see bats. And we're planning our next trip is to Uganda, where we'll combine bat watching and gorilla and chimp watching. And so we just—it—introducing people to bats is something we do in addition to what they would normally get to do if they went to a unique, far flung part of the world.

DT: And are there some spectacles or sort of teachable moments that you can recall when you've been on these exotic trips? Things that might've taught your travelers something that they really could put to use in their own understanding of bat history?

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MT: Oh, for example, on—on one trip to Venezuela, we stopped our bus after going out for a nice dinner and everybody got out and looked up at a kapok tree that was in bloom and saw literally thousands of bats swarming in to pollinate the flowers. And you just don't get a real feel for how important bats are as pollinators until you've seen something like that. We do—on our trips, people get a lot of opportunity to see just how and why bats are really important.

DT: I understand that a lot of your own travels have taken you over the years to mines and I was hoping that you might be able to tell us about how you've managed to enclose some of these mines in a way that the bats can continue to use them even if the mine has been shut down.

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MT: In the early 1990s, by federal and state mandate, hundreds of thousands of American mines were targeted for immediate safety closures and this posed a huge threat to the future of American bats because literally millions, perhaps a majority of remaining American cave dwelling bats now live in abandoned mines. The caves have been destroyed or disturbed until they had to move out and the mines are kind of arks of last refuge. And at the time that I first began talking to people about saving old mines as bat sanctuaries, there were major—actually even conservation organizations—oh.

(misc.)

DT: Let's resume. We were talking about the closure of some of these mines for safety reasons and how ya'll managed to protect them as bat habitat.

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MT: Okay, I'll just start kind of over on that. In the early 1980s, by federal and state mandate, hundreds of thousands of American mines were slated for immediate safety closures. This had the potential to destroy a large proportion of remaining bats in America because literally millions of bats in single cases have been forced out of caves that were commercialized or destroyed and have taken up refuge in old abandoned mines to survive. And in the early days of those closures, literally millions of American bats got buried alive and, in fact in one case, the most important bat hibernation site in the state of New Jersey was capped with concrete with the bats inside in the winter. But a Bat Conservation International member alertly s—saw this happen and called us and said we've heard that there are bats in it and we were able to confirm that it was a key site and get it uncapped in time to

00:21:36 – 2401

save the bats and now that is a permanent sanctuary. But we worked diligently, collaboratively with the mining industry and federal agencies to achieve this. It—early on, a lot of fellow conservationists thought we were just going to give the mine industry excuses to not clean up problems, but in fact, the mine industry responded exceedingly well. When I first approached the American Mining Association, I was treated kind of like a skunk in your office. Don't upset him, try to get him out of here as quick as possible and let's make sure he never gets back in. But we showed by just good, honest effort that we could work very collaboratively with the industry and we showed them that we could actually build bat friendly gates on mines, save them sometimes up to ninety percent of their anticipated closure costs and get them great publicity for participating in conservation, which was, you know, a no-brainer.

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And so this project has become extremely popular and is still going full steam ahead fifteen, twenty years after it started. And the mining industry is very proud of their participation in creating bat sanctuaries. I'm told that there are now several thousand bat sanctuaries that have been created as a result of this effort. I've lost track of the exact count a long time ago.

DT: This might be a good chance to talk about some of these collaborations that you've had as a hallmark of BCI's activity. You know, you've worked with the Highway Department, you've worked with the Mining Industry, you've worked with individual homeowners who might want to put up a bat house. Can you describe how you've hit that as a good style for your group?

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MT: If you're going to achieve big success with almost no money, you'd better find partners and we have, along with being very positive in our approach, we've been very partner oriented. We have achieved vastly more than could've otherwise been achieved through partnership. For example, our student scholars. Every year, we have a student scholarship program to help encourage bright young students who want to do things that are conservation relevant and would like to work on bats; we have a scholarship program to support them in their thesis work. We don't give big scholarships, they're only worth twenty-five hundred to five thousand dollars a piece, but because we have an international panel of world famous bat researchers, you know, the top people in the world reviewing these proposals, when a student gets a

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scholarship from us, on average, he or she matches that eleven to one with outside money because of the credibility gained by having gotten our scholarship first. So we also have relied heavily on—on partnerships and things like the mining issue that we just discussed. The—a perfect example occurred in Illinois when the Unimin Mining Company realized that they had about a hundred bats in an old silica mine that was about to be closed permanently and they contacted the Forest Service—we had a partnership with the Forest Service. They came back and contacted us. We sent staff up to examine the mine, determined that it was potentially ideal habitat for endangered Indiana bats and the endangered Indiana bat was once on—probably on a par with passenger pigeons. It was an extremely abundant animal and today it's

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one of our most endangered. Well, by partnering with the Unimin Company, the Forest Service, the State and National Speleological Society and other entities, we were able to put together a volunteer effort. It still cost a hundred and fifty thousand dollars, but we saved a huge amount of money and nobody had to put in, you know, enough to break their bank account to get it done. We all take great pride in having set aside this permanent sanctuary and today, that one mine has forty-five—close to forty-five thousand Indiana bats in a geometrically growing population that has the potential to one day shelter more of this endangered species than now occurs in the whole rest of the U.S. combined. And we're all very proud of this. There's no reason to exclude anybody from recognition. It might not have gotten done without any one of us helping.

DT: Something else I've found interesting about the way you've gone about your work personally, and I guess it goes across to the entire organization, is that you have sought some sort of a balance between scientific research, conservational work, public relations work, organizing work. There are a lot of different facets and I was curious to how you hit

that balance, both for the group and for your own personal life?

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MT: We're very science based. When we're confronted with a new major problem, we set out to solve it through science very often. We have to be science based because although bats comprise a quarter of the world's—nearly a quarter of the world's mammal species, they're by far the least studied. Probably less than five percent of bat species have been studied sufficiently to understand anything really important about their ecological or economic values, their status or their conservation needs. And so we have to be very research oriented, but it's also a powerful tool. We don't go to people with just an emotional appeal that bats are nice or they deserve protection or anything else, we go to them with science. And a good example of that is that we're now up against a huge problem with the wind industry's

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impact—accumulative impacts on bats in America. Right here in Texas, we have more than fourteen hundred wind turbines now and not a single one of them has ever been scientifically studied to see what its impact on wildlife is. And Bat Conservation International has stepped forward at a time when virtually every other conservation organization was jumping on the bandwagon that this was a wonderful, all green source of energy and said wait a minute. Nothing's all green. There are some really significant issues here. We didn't go out and battle the wind industry because there were significant issues, we organized a major meeting of the leadership nationally in the wind industry here at Bat Conservation International and I pointed out that we have serious reason to be very concerned and that it's much better to collaborate and mutually joining forces to find a solution than it is to waste

00:29:45 – 2401

our resources fighting over the fact that there's a problem. Their green image is at stake and the bats we conserve are at stake. We're going to get a lot more accomplished by joining forces to solve the problem. We have already raised well over a million dollars to fund joint research with the wind industry, looking for solutions to bat kills. Bats are killed probably fifteen times more frequently—maybe even worse than that—than birds at wind turbines. In a single study, the most credible study every conducted of mortality at wind turbines, scientists we assembled, who are the top scientists in the country with regard to their knowledge of bats, showed that just sixty-four turbines killed two thousand bats in six weeks. That's a serious cause for concern, especially here in Texas where we have turbines going in right and left with no assessment of their impact on bats.

DT: Will part of the research be an assessment of the impacts from the proposed wind farm down at the Kennedy Ranch?

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MT: That's an issue on which I have publicly testified in hearings. It's a situation that hasn't been even remotely adequately studied. But in Texas, there are no regulations that require more than a—much more than a building permit to build a new site. And so we're—we're deeply concerned about these issues. So far, we've been able to convince the industry not to put turbines in the hill country where they would immediately and directly impact free tailed bats. We know that our most abundant and ecologically important bats here are among the most vulnerable to wind energy because of studies in states like Oklahoma where they have shown that—that pregnant and nursing mothers are among the most

frequently killed bats. But what's important is that instead of just going out and battling the wind industry,

00:32:13 – 2401

we have collaborated with them to do the research and we're making a lot of progress toward finding solutions that couldn't be made if we were just emotionally getting into a battle.

DT: I think you've talked some now about the collaborative approach that BCI takes. Are there other sort of characteristic ways that BCI operates that you'd like to talk about?

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MT: The—the key mode of operation at BCI is to find positive collaborative partnership approaches to our worst problems and we've been very successful at that, but let me point out that there is a huge amount more that needs to be done. We're representing almost a quarter of the world's mammal species as one organization and other glamour type species get represented by multiple organizations who spend more than our annual budget on a single species. Bats are indisputably essential, ecologically and economically, on a worldwide basis. And to think that we're going to conserve and protect healthy ecosystems and leave out an essential quarter of the world's mammal species is preposterous. There's a huge amount more that needs to be done. We're always looking for new partners and to the extent that we find them, that's great. But there's still a horrible dearth of

00:34:10 – 2401

knowledge and lack of awareness that concerns me greatly. I can look from the standpoint that I prefer to look and say wow, isn't it just fabulous what we've been able to accomplish? I mean, one little organization has had worldwide impact on people's attitudes about bats. We've been instrumental in creating thousands of permanent sanctuaries for bats just in America alone. We've had lasting impact, for example, just last year, I was urgently called by a family in the Philippines who owned a big bat cave and they had contacted all the conservation organizations that have big names that they could think of and nobody had paid any attention at all to the fact that they had a bat cave that needed to be protected. They had been assiduously protecting this cave since before World War II. They were about to lose it because the Philippine government, under an agrarian reform act, had—was

00:35:21 – 2401

trying to declare it as agricultural land to be used in a different manner than—than protecting the cave on it. And so they sent me some—thank goodness we have email these days—they s—emailed me some photographs and explained what the situation was and within six weeks, I and one of my staff were on a plane, on site in the Philippines, checking this out. We quickly found that the cave had two million fruit and nectar eating bats in it that constituted the largest remaining popu—bat population of its type anywhere on the planet. These bats were responsible for pollinating countless millions of durian flowers every night during durian season and you can't produce a durian crop without pollinated flowers. The durian is one of the favorite fruits of the Philippines. Just by doing a quick on site assessment to show how many bats were in the cave, doing some calculations based on known

00:36:35 – 2401

consumption rates of pollen and nectar, we were able to quickly put together a scenario. We put on a workshop within a few days and attracted leading conservationists and government officials. Within six days of our arrival, we had the town mayor and leading

officials sign a joint petition with us to the government asking that this site be instead set aside as—as a—as critical wildlife habitat. That site is now critical wildlife habitat. There is now an educational center there for educating people about bats. And because of seeing how close they came to losing a critical economic resource, we, as I speak, have cave surveys going on in other parts of the Philippines to identify additionally critical sites in need of protection and planning strategies for protecting them. That all came out of an expenditure of three thousand dollars. Now tell me where you're going to get a better bang for your buck in conservation.

DT: That's impressive. Are there some other BCI accomplishments that you're particularly proud of?

00:37:53 - 2401

MT: Well, there are a lot of—I'm sorry. I shouldn't start out well. There are a lot of accomplishments that I'm very much—that—there are a lot of accomplishments that I'm very proud of. For example, back about the time that I moved Bat Conservation International to Austin, a well known Harvard botanist contacted me and was deeply concerned about flying foxes that were being extirpated in the—in Samoa by commercial hunters that were shipping them to Guam as a delicacy to be eaten. And I got together a couple—a—a donor couple that sponsored this botanist and myself and we all went to—to American Samoa and, because of my donor's clout, we got a meeting with the governor of Samoa. And our whole purpose was to go and see what could be done to stop this commercial trade that was decimating

00:38:56 - 2401

the bats that were essential to probably more than half of all the trees and shrubs of—of Samoa in terms of the species supporting them by pollination and seed dispersal. On our first day there, I knew that it wasn't going to be very popular so I kind of gave my group the slip and said I need to go and run some errands in town. I went in and found out who the commercial hunters were, went and met them personally and talked to them as a fellow hunter who just happened to be a bat scientist as well and was interested in—in—in their—their hunting and in the flying foxes and asked them if they were going to be going on any hunts in the near future. And they said well, as a matter of fact, we're going tonight. Why don't you join us? And so I went out with them that night. I didn't shoot any flying foxes, but they told me how if I'd just been there the year before, they could shoot down a hundred in an

00:39:58 - 2401

hour in this mountain pass where they had to fly through and the night I was with them, they only shot three. And so I just started asking innocent sounding questions about what was happening to the hunting and why there were so much—so few now as opposed to last year and got them to admit that the hunters had shot way too many and—and I raised just—just gently, you know, you can't do too many of these at once, but questions about weren't they concerned about their children and grandchildren being able to hunt, too? And what were they going to do when there weren't anymore? And I went out two or three evenings in a row with these hunters and by the final one, I had pointed out that I was about to meet with the governor and would be happy, as a fellow hunter, to—to ask on their behalf for legislation like we have in the mainland U.S. governing hunting so that there'd be bag limits and seasons and they would have a future for flying fox hunting. By the time I met with the governor, I was the official representative of the hunters, asking for

game laws.

00:41:20 – 2401

And I had the Harvard botanist with me, arguing how important the bats were ecologically and economically to the country and it was—it was a no-brainer sell, you know, because the governor—if we were representing Samoan hunters and telling him how important the bats were ecologically and economically, this was something that you, you know, to do. Within six months, they passed the game laws and then the hunters, on their own volition, decided that they had done so much damage that they should declare a five year moratorium on hunting. And then we had made such good friends with the hunters in the meantime—and—and let me tell you that some of my sponsors and collaborators were utterly appalled when they found out I'd been going out with the hunters and that I was giving a wrong image of what, you know, that was somehow tacitly accepting what they were doing and

00:42:19 – 2401

everything. And—and yet, the upshot of that was that we became very good friends with the hunters, found out that they didn't need the money. They were wealthy businessmen. And that they were just selling the bats so that they'd have more money to pay for shotgun shells to pay for partying. And these guys ended up feeling quite ashamed that they had put these bats to—so close to extinction by their activities. And we all got together and they were key players in getting a national park in Samoa to protect these bats. So we now have a Samoan National Park centered around protecting flying foxes and it could not have been achieved without the full support of Samoan flying fox hunters.

DT: Can you tell me maybe about what you see as the major trends that you see in the future? You've talked about some of the threats, whether it's housing or mine closure, but you've also talked about some of the successes that you've had in protecting bats. Can you talk about the balance of the two?

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MT: I'm sorry. You need to kind of go through that once more. I didn't quite...

DT: It seems like most things, there are opportunities and challenges and you've shown that there are challenges, whether it's hunting or habitat loss or mine closures that threaten bats. On the other hand, there are opportunities to collaborate and do good research to try to find solutions. When you look into the future, what do you think the future will hold for bats and bat protection?

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MT: Well, let me tell you about two things that are going on right now that I think are critical to the future. In about 1990, I realized that bats were never going to get the attention that they needed from federal and state agencies the way we were going. We'd go to a state or federal agency and ask them to do something about bats and because bats were so unpopular, it just wasn't something that was on their to-do list. And they would always say well, we're—we're sorry, but the money, you know, is alr—we don't have any funds left. We're already doing urgent things for other animals. And so I figured that the only way to change that was to infect them with the bat virus, which is essentially—what I did was we founded five day bat

00:45:03 – 2401

conservation and management workshops and that was when Bob Armstrong from Austin was undersecretary for the Department of Interior. And I got him to organize a three day

workshop where I took the leadership—directors and assistant directors of federal agencies—out and gave them three days of intensive bat training. And then we started doing five day workshops centered on wildlife biologists, especially federal and state employees and corporate biologists. And we would take them out to the American Museum of Natural History's research station in Arizona in the Chiricahua Mountains, it's the most fabulous wildlife area in the U.S. in terms of species diversity. You can—while you learn about bats, have trogons overhead and occasionally see a mountain lion or a bear. And so the people that we first showed what we could do got interested and we started giving scholarships, actually, to

00:46:19 - 2401

biologists from key agencies. In fact, one of the guys who got a scholarship was from the Department of Transportation here in—in Texas. And we would take them out and for five days, we'd get—immerse them in this really intensive bat training and they could actually capture and handle and see close up up to nineteen species of bats in a single evening. And these guys would come back as just virtual bat zealots. And all of a sudden, federal and state agencies started finding room for bats in their budgets because these guys all wanted to work with bats. And we've now trained hundreds of federal employees alone at these workshops. We've spons—we've trained major federal and state agency people and private conservation entity people from twenty countries at these five day workshops. We've graduated

00:47:26 - 2401

probably more than fifteen hundred now from this training. It's having a huge impact in getting these can't do attitudes changed in the federal and state agencies because within their own groups, now when we hold a workshop—for example, the Forest Service employees are often helping teach the workshop. We have PhD level bat biologists in the Forest Service and other federal agencies that got—that went back to school and got their degrees in bat biology because of having gone to one of our workshops. And these people now help teach workshops and the Forest Service International program is now helping us expand our workshop training program into Latin America so that we can do workshops that are all in Spanish and I'll be going down, working on setting one of these up in the next couple months. But those—

00:48:27 - 2401

those workshop activities have played a pivotal role in getting the right people excited about bats. The other thing that we're doing right now is starting to do rapid assessment surveys for key bat roosts in caves and we have one of these going on in—in the Philippines, we've got one going on in Mexico right now where we're surveying hundreds of caves to see which ones have had bats. Oftentimes in the past, even when the Fish and Wildlife Service has tried to protect endangered species, they tend to protect the cave that has even a few dozen endangered bats in it today, not the one that had a million in the past. And it's the one that had the million in the past that's the key bastion of survival where we need to be protecting the bats. So we're now training field teams in how to identify evidence of past bat

00:49:34 - 2401

use in caves and if a big colony of bats has used a cave in the past, even if they've been gone for two hundred years, we can still find the evidence because they stain the limestone on the ceiling. And we know the roosting densities on average so we can measure the area

stained and figure out how many bats are there. In fact, this is a big issue here in Texas. We have the cave bat that we don't hear much about but was once a widespread common bat in Texas and we can show today that there are very few relative to the past, based on stain evidence in caves. And these are issues that have been totally neglected in conservation planning because nobody even knew that these sites had had large numbers in the past. So helping to assess sites for restoration rather than just protecting what's left has been a big step and training people in workshops is a crucial step.

(misc.)

DT: What are some of your concerns that you'd like to tell us about?

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MT: I am deeply concerned at the extent to which we're losing irreplaceable resources. For example, if somebody destroyed Bracken Cave, you could never res—bring it back. If the Air Force years ago had been able to bomb it shut, there wouldn't be any Bracken Cave. All over the world today, critical resources that can't be restored are under threat and it's our generation that is going to make the difference as to whether there is something to protect in the future. Resources, both wildlife and their habitat, are being lost at such alarming rates today that, you know, if—if we don't step up to the plate and make a big difference in our lifetimes, our children aren't going to have much left to protect. It's critical that we put together sustainable tracts of protected habitat and that we—you know, and one of the things

00:51:47 - 2401

about bats, you c—I—I—I love what The Nature Conservancy and others are doing to put together contiguous tracts of habitat that look—not just at a few acres here, but how this ecosystem and how these animals are going to survive over a bigger area. But if we don't also recognize the uniqueness of bat conservation needs, we're putting a lot of these other projects in jeopardy because, for example, the bats at Bracken Cave have enormous ecological and economic impact over thousands of square miles around all summer. And then they migrate to Mexico in the winter and have impact over thousands of square miles around where they go in Mexico. Bat conservation is especially difficult in some respects because we can lose these key resources so easily and they're such foc—focal points for people intentionally eradicating. You go to birds and other animals that nest here and there over the

00:52:58 - 2401

landscape and you can't knock out twenty million of them in one event. With bats, you can knock out twenty million in one event and if you succeed in destroying that cave, you may never get them back. On the other hand, the flip side of this coin is that there are very few places in the whole world of conservation where you can have such a huge impact by protecting such a small area. By protecting Bracken Cave, we're ensuring a chance for healthy ecosystems over thousands of square miles around both here and in Mexico. So there's a bad side and there's a good side. I like to look at the good side but I also see that time is running out to save these kinds of places. We're doing very well in general these days in America, but there are critical resources, like Bracken Cave, all over the world that are being imminently threatened, that could be permanently lost if somebody in our generation doesn't do something to at least protect them from being destroyed.

DT: You mentioned some of these critical resources and I imagine some of them are very special places to you. Is there one in particular that you could point out that you enjoy

visiting and maybe revisiting because it gives you this sense of adventure or a sense of solace in visiting?

00:54:35 – 2401

MT: Of all the places I've successfully protected and—let—let me start over. I don't successfully protect anything on my own. When I say I, I need to be thinking about all the countless partners and members of Bat Conservation International that made my efforts successful. And it's not just my efforts; it's the efforts of all of us combined that are doing these things. But of all the places that I have personally spearheaded that I wanted to get protected, nothing has been more important to me than Bracken Cave. Bracken Cave is one place where just by protecting a few acres, we can have huge impact across most of our state and well into Mexico. And it's a place that has huge appeal, even if these bats had no ecologic or economic value.

00:55:35 – 2401

It's well documented that mental health in humans is often closely associated with our ability to get away from the stress of fellow humans crowded at our elbows and go out and enjoy nature. There is not a more enjoyable experience that I've ever encountered in all of my world travels than just sitting out at the entrance of Bracken Cave and watching twenty million bats fly overhead.

DT: Well, I hope that we all get a chance to visit it and for many years in the future. Is there anything you'd like to add before we wrap up this interview?

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MT: No, there are whole areas that we didn't cover, but they may not be important for you to cover, so. I—you're the only one that knows what it is that's important.

DT: Well, what you've already told us has been very valuable. I wanted to thank you for taking the time to talk to us.

00:56:32 – 2401

MT: Good.

(misc.)

[End of Tape 2401]

[End of Interview with Merlin Tuttle]