

TRANSCRIPT

INTERVIEWEE: Dianne Odegard

INTERVIEWER: David Todd

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Google Voice [00:00:00] This call is now being recorded.

David Todd [00:00:04] Dianne, this is David Todd.

Dianne Odegard [00:00:07] Hi, David. How are you?

David Todd [00:00:09] I'm fine. I'm better because you called. Well, good to hear your voice.

Dianne Odegard [00:00:16] I would like to, I'd like to brighten one's day.

David Todd [00:00:20] Yeah. Well, thank you for making this a fun day. Always look forward to talking to interesting people who are doing very worthwhile things, so. Thanks for taking some time to do that.

Dianne Odegard [00:00:37] You're very welcome.

David Todd [00:00:40] Well, as we get into this, I wanted to just sort of lay out what I had in mind and make sure that this is copacetic and acceptable to you.

Dianne Odegard [00:00:53] OK.

David Todd [00:00:53] So if I could just explain for a moment what the typical plan is, I'd appreciate it.

Dianne Odegard [00:01:03] Sure.

David Todd [00:01:04] OK. Well, with your approval of we are planning on recording this interview for research and education work on behalf of the Conservation History Association of Texas for a book and for a Web site for Texas A&M University Press.

Dianne Odegard [00:01:25] OK, cool.

David Todd [00:01:27] OK. And for an archive at the Briscoe Center for American History, the University of Texas at Austin.

Dianne Odegard [00:01:34] Well, that's exciting. All of those projects. So exciting!

David Todd [00:01:38] Yeah. And you would have all equal rights to use the recording and the related materials as well.

Dianne Odegard [00:01:47] That sounds great. Great, David.

David Todd [00:01:47] But that's kind of the protocol. And I was hoping that that sounds OK with you.

Dianne Odegard [00:01:54] That sounds great. Yes, that sounds wonderful. I really appreciate that you're doing this project to get some, you know, to shine some light on these bats. You know, every little bit helps. And this sounds like it's going to have some wide-reaching positive effects for bats.

David Todd [00:02:15] Well, I hope so. Well, let's let's lay out sort of when and where and who is involved here, and then we can get started with some questions and your thoughts on the other end.

Dianne Odegard [00:02:30] OK.

David Todd [00:02:30] It is August 31, 2020. And my name is David Todd. I'm here for the Conservation History Association of Texas. And I am in Austin. And we are conducting a phone interview with Dianne Odegard, who is also in Austin. She's a wildlife rehabilitator, and works as the co-founder and executive director of Austin Bat Refuge and earlier served as education and public outreach manager with Bat Conservation International. And that's just a very brief bio, but I hope serves as an introduction. OK. And today, we'll focus on discussing, of course, her life and work, but maybe use as a kind of example of her work with the Mexican free-tail bat.

David Todd [00:03:27] So a first question: how did you originally get interested in the outdoors and in wildlife?

Dianne Odegard [00:03:39] Well, I think I've always been interested in animals, in general. I've always been fascinated and drawn to them even as a child.

Dianne Odegard [00:03:53] I started getting into wildlife rehabilitation back around 1990, when I saw a little ad in maybe the newspaper of the time about training classes for wildlife rehabilitation given by Wildlife Rescue, Inc., here in Austin. And I thought, well, this is something I've wanted to do for a long time.

Dianne Odegard [00:04:20] And I took advantage of that and met a lot of other people who were working with many different species of wildlife. And I was pretty hooked from the start. I got to work with different species, like raccoons, opossum, squirrels, occasionally, foxes, ring-tailed cats. Beavers occasionally - really interesting species. And I've done this for many, many years as a hobby, always having full-time work along with it.

Dianne Odegard [00:05:08] And actually met a woman in the 90s named Barbara French who rehabbed bats here in Austin. She was the only bat rehabilitator in Austin. And she worked for Bat Conservation International. So I got to meet her and learn a little bit about the bats that she rehabilitated back in the 90s, and then fast forward to 2005 when I got a job at BCI myself. And Barbara was still working there. So I really got to sort of apprentice with her in that rehabilitation, all the while learning a lot about science and biology of bats from the other who worked there. So it was a fascinating job. I got to work with directly with Dr. Merlin Tuttle. In fact, I started out at BCI as his executive assistant. So I was able to really have a broad education in bat biology and bat conservation simply by soaking it all in. Since Barbara French left town in 2009, my husband, Lee Mackenzie, and I have become the only bat

rehabilitators in the area. So we are carrying on, carrying on the fight to save bats on an individual basis.

David Todd [00:06:46] OK. Well, so I know you do this out of a personal interest and love, but I gather that a lot of the work is organized under the umbrella of Austin Bat Refuge. And I was hoping you could tell me a little bit about the origins and goals and the work of the Refuge.

Dianne Odegard [00:07:09] Sure. Sure. Austin Bat Refuge was started as an official nonprofit organization about four years ago. At the time, I was still working at Bat Conservation International, but we realized that since we weren't funded and are not funded by any nongovernmental organizations (BCI did not fund our work, the City of Austin doesn't fund our work), and we were beginning to incur a lot of expenses in bat rehabilitation as we took in more and more bats and had to build more structures in which to work with them. And so we thought we had best become an official nonprofit so that we could accept donations from the public for the bat work that we were doing.

Dianne Odegard [00:08:10] And so since then, I've left BCI in the summer of 2017 and since then have been working full-time. So now my official job not just, not just my hobby after working hours. So in the last several years, we have expanded our, our mission to include education, which has always actually been part of our, our mission and our activities. We do education of kids in schools. We, we do programs for, for clubs for natural math, natural, our master naturalist groups and neighborhood groups and any, almost anyone who asks, can get a bat program. And we do now some conflict resolution, which is also very important. It's an area that I worked in when I was at Bat Conservation International. They no longer really do that work. And so that has been kind of thrown to us. BCI refers people who have questions about bats in buildings to Austin Bat Refuge. So we take a lot of those calls from BCI and from the public in general. We are really, really passionate about protecting bats in buildings, if at all possible. And when people simply cannot tolerate the idea of bats roosting in an attic or a building, even that is not occupied, that they may own, we help them do a humane bat exclusion. So all of those activities are really equally important to us. But one consequence, of course, is care of many, many individual bats that come into us, almost on a daily basis. We just realized that today, August 31, 2020, is, I believe, the 244th day of the year. And just by coincidence, we have taken in so far this year 244 bats.

David Todd [00:10:52] All right. Well, so we've been talking about bats. And I know there are many different kinds and they have lots of interesting features. Could you just give us the fingernail outline of, of the Mexican free-tailed bats' biology, you know. So what sort of makes it distinctive in terms of its, its natural history?

Dianne Odegard [00:11:25] Right? Well, there are a lot of really distinctive features about Mexican free-tail bats. One of, one of the ones that is obvious to anyone who has seen bats emerging from a large roost is that they are colonial species. And they roost in very large numbers. And of course, that creates the opportunity to see bat emergences at bridges and caves all throughout central Texas.

Dianne Odegard [00:12:00] These bats are physically quite different from any other bat that is in our area. Now they're called free-tail bats because they actually do have a tail that extends out from their tail membrane. Now, all bats, or at least most, have a tail, but most bat tails are covered by a membrane, that, that really kind of hides the tail itself. But the free-tails have a little tail that actually looks kind of like a mouse tail. Much as we hate to compare bats

to mice, as many people do, it does look like a little mouse tail. So they're very recognizable, if seen up close by that little tail that sticks out about an inch or more.

Dianne Odegard [00:12:53] They also have almost a clownish face. People, Dr. Tuttle once called them "little gnomes with an overbite." They have very large ears that all that really meet in the middle of their heads. They have wrinkled lips and definitely a significant overbite. So their little faces are very, very distinctive. They're, they're quite beautiful, for people who are able to see. Some people find them unattractive. Certainly we find them amazing and beautiful.

Dianne Odegard [00:13:43] These bats migrate for over a thousand miles back and forth from Mexico to their homes, summer homes in central Texas and they tend to migrate in groups. So it's safer for them to do that. They are safer from any kind of predator attacks when they migrate in groups. And they can fly almost 100 miles an hour in level flight, which is faster than any other flying creature on earth in level flight. And they can go a long way, even just on a nightly foraging trip. If they have to go down to the Texas coast to get enough to eat, they can actually do that in one night.

David Todd [00:14:39] That's extraordinary.

Dianne Odegard [00:14:41] It is extraordinary. They're are amazing animals. They're, they're, they have what seem like superpowers. They fly almost two miles up in the atmosphere. And we believe that they do that in order to meet moth migration at certain times of year. So they're very powerful flyers. They have, their wing shape is long and narrow and they're built for, for speed and for flight and foraging out in the open.

David Todd [00:15:19] Interesting. And I'm writing, so I hope I'm keeping up with you.

David Todd [00:15:27] Well, in one aspect of their, their biology that you mentioned is that they, they are colonial species. And I guess for those of us live in central Texas, that's a pretty outstanding aspect to their life. I mean, I think a lot of us have managed to see them more than other bats, you know, at places like Bracken and the Ann Richards Congress Avenue bridge. Can you talk a little bit about the discovery of those bats at the Richards bridge and the initial reaction when they were first discovered?

Dianne Odegard [00:16:08] Right. Right. They started moving into that bridge in 1980 when repairs and, and widening, I believe, of the bridge at that time were going on. And so they, they actually created a bat habitat because they used a concrete box beam design as they were, as they were widening the bridge and making changes, structural changes.

Dianne Odegard [00:16:41] Now there are a couple of different aspects to that that were attractive to bats. Number one, concrete itself is a perfect roosting material for free-tailed bats. The reason for that is that it keeps its, it holds heat throughout the night. And that's important because baby free-tails, bat pups, are born naked and completely dependent. And mothers do not carry their their pup when they go off to forage at night. So they have to stay in the bridge or whatever roost that that we're talking about with all the other bat pups, and they need to be warm. So that was, those two elements were perfect.

Dianne Odegard [00:17:36] Also the crevices that were created with the expansion joints in that bridge were just exactly the right width, about three quarters of an inch and about 17 inches tall, were perfect size for the bats to reach them. The bats are quite small. They really,

there's not much to their, to their little body when you see them with their wings folded. It's surprising to most people how tiny they are.

Dianne Odegard [00:18:10] So they started moving in. It was perfect. Thank you for us for this wonderful place to roost. It's also open water. So getting enough to drink is never going to be a problem.

Dianne Odegard [00:18:22] But people of Austin were not particularly happy about this at the time. Back in the 80s, it wasn't, there weren't a lot of bat specialists among scientists and there was not a lot of public information about what bats, what bats are, what they're like, what they do, what their habits are, what they're, what, any danger or threat that they might pose to humans. I think the most that people at that time, most of the general public at that time knew about bats, was that bats could give you rabies. And so I think that was the first thing that occurred to most people that we have bats moving into the center of our town. And we are in danger.

Dianne Odegard [00:19:20] And that's was, that was a danger for the bats. It took many years of people being frightened, city agencies really wanting the bats to leave, not wanting to deal with any of this. Public health departments were, were concerned that many, many people were going to be given the disease by these bats. And it's really lucky, when I think back on it and look at look at the, the sequence of events back in the 80s, I'm really, I'm kind of amazed, and I'm really grateful that the bats were not eradicated. It was a real possibility at the time that those bats would be eliminated either by sealing in those, those expansion joints or recreating the bridge in some way. I'm not sure how they could have done it, but they were thinking of ways that those bats could no longer live there.

Dianne Odegard [00:20:39] Now, first, Dr Tuttle came to Austin. He moved BCI, his fledgling organization up in Milwaukee, to Austin in 1986. Now he, at the time, was hearing reports and articles in the newspapers, and this is true apparently all around the world, about these bats that had moved into this bridge in Austin, Texas, putting the entire population in danger. So he was seeing these reports, of course there was no Internet back then, so that wasn't a source of information. But newspapers and radio and TV reports were actually quite common at the time in many places in the United States and around the world. People, people were saying that, that the bats had to go. And in fact, it took quite a while for the Parks and Recreation Department to participate in any way by putting up signs, saying please do not handle grounded bats. It took several years. Even once the education started in the schools and for so many different groups in Austin about how beneficial the bats were to have in our environment.

Dianne Odegard [00:22:15] It took a while before the city actually decided to sort of weigh in on the side of the bat. Eventually, it did happen, but not before a child was actually bitten by a bat under the bridge. The bat was tested by the health department and actually found to be positive for rabies. Which, of course, and I'll talk about that a little more as we go on. It's possible bats certainly can get rabies like any other mammal and any wild animal that is approached and handled by a person might bite out of, out of fear, of course. However, the fact that this child was bitten by a bat under the bridge and that the bat actually turned out to be rabid and that the child got exposure vaccinations was really big news in Austin and beyond and added to this to, this atmosphere of fear and dread about the bats. So this was not an easy task to educate the public about bat benefits. It was, it wasn't overnight and it happened over time. And thank goodness that it happened before those bats were eliminated from the bridge. It's just it's just astonishing to me, honestly.

David Todd [00:24:01] Yeah, extraordinary. Well it would be interesting to hear, you know, maybe going fast forward several decades, what the reception is now to the bats on a typical summer night when you have, you know, tourists and visitors of all kinds on the bridge and in the lake and on the shore, at the Statesman, watching these bats emerge and I guess coming up to ask you questions. Tell us a little about what the thoughts are now from people who come to see bats.

Dianne Odegard [00:24:47] Generally speaking, people come to see the bats because they have, either because they have known about it for a long time, because they actually live in the area, or because they read about it online and they are coming from another state or even another country to see this amazing bat emergence. So most people that come down to see the bat are, are basically pro-bats. They're interested in bats. They know a little bit about bats from their reading and they're looking forward to to a good show when the bats fly out of the bridge. People tend to bring friends and family from out of town down to the bridge. They sometimes bring their parents and grandparents. We've noticed that the older people who come down to the bridge with their younger relatives are a little bit harder sell, convincing them that bats are not dangerous to them as long as certain obvious and and common sense precautions are taken. But very different here in 2020 from say 1984 when, when the headline in the American Statesman newspaper was "Bat Colony Sink Teeth Into City".

Dianne Odegard [00:26:34] So people understand that this is a natural phenomenon that bats eat insects and that they provide ecosystem services to the people of central Texas. We still, of course, run into people who, who are afraid. Sometimes it's just from, from the fact that the only thing they've ever heard about bats is that they might give you rabies. And a lot of people know only that one actual known fact about bats. People believe often that all bats either have or carry rabies. Which is, which is not true. Bats are not carriers of the rabies virus. When bats get the virus, they die from it like any other mammal. So there's a lot of education that goes into convincing people that bats are not going to harm them.

David Todd [00:27:52] You said in passing that, you know, there's been this traditional fear of bats, but I think you said that increasingly there's a recognition that there's a lot of value, and I was hoping that you might be able to talk about some ecosystem services, I guess the pest control.

Dianne Odegard [00:28:16] Right.

David Todd [00:28:16] And then also just the dollars that tourists bring when they come to see the bats, and, you know, they buy a meal or stay at a hotel, whatever.

Dianne Odegard [00:28:26] Right. Yeah. There are a lot of that are there are a lot of economic values to the city of Austin from people who actually come specifically to Austin to see the bats. You know, obviously, people spend money here on hotels and in restaurants and shopping and in our retail shops. There was a study in 2007 by a student at Texas State that indicated that at that time, the bats brought an economic value to the city of Austin of about eight million dollars. And we assume since then that that value has only gone up because the crowds at the bridge have increased so dramatically. So I don't think we have an actual study or a scientific paper to point to to say exactly how much money the city makes from people coming to see bats, but our assumption is that it's probably in the 12 million dollar range.

David Todd [00:29:41] How many visitors do you think there are a year, or at least before the COVID slowdown?

Dianne Odegard [00:29:49] You know, I honestly, that's very hard to say because there are literally thousands of people every night in the summer, every night that that it's not raining, which is, of course, most nights. I honestly don't know. But it's, you know, certainly tens of thousands, if not hundreds of thousands, during, during the summer. And it's not only the summer. People are down there on any nice day of the year, certainly our, as you know, our winter weather here in Austin can be, can be very temperate and sometimes quite warm. And there are bats that stay in the bridge all year long. So there are people watching those bats literally every single month of the year.

David Todd [00:30:50] And I gather that not only are they, you know, here under the bridge, but they're also out foraging. And from what I gather, they eat moths and other pests that maybe have some agricultural impacts. Could you talk about pest control value?

Dianne Odegard [00:31:12] Yeah, absolutely. The pest control value, depending on exactly where you're talking about, is certainly billions of dollars. So estimates of country-wide economic value to agriculture can go anywhere from three billion dollars a year to in the 50, 50 billion a year. And there are several papers out now that actually quantify those numbers. We think probably somewhere in the middle of that is, is going to be what we typically see in terms of value - somewhere in the 20, 21, 23 billion dollars a year, the pest control value of all bats across the United States.

Dianne Odegard [00:32:07] In Texas, a paper was, was produced and published in 2007 that indicated an average annual value to the cotton industry in south central Texas of 741,000 dollars. So and then assuming, you know, values obtained from the cotton-dominated agro ecosystem in Texas and the number of acres of harvested crop land across the continental United States in 200, this is where you get 22.9 billion a year or as I said, as low as 3.7 Billion and as high as 53 billion a year. So this, of course, is in reduced costs of pesticides and applying, applications and pesticides. And, you know, the benefits of that, not only to, of cost, but to a more healthy environment for everyone.

David Todd [00:33:26] So I guess some of your work with bats is to educate people about, you know, the values we've talked about in their natural history, their habits and behavior. But I gather that, you know, a lot of what Austin Bat Refuge does is is rehabilitation and release with bats. And I was hoping that you could talk a little bit about your work there, what sort of, kind of repairs you do to these bats and what sort of structures and techniques you've got to make that happen.

Dianne Odegard [00:34:11] Right. Yeah, we we see bats coming in with all kinds of, of injuries. We never, we rarely know exactly what happened. Sometimes we know. Sometimes, someone will bring a bat in and say, well, my cat brought this bat from the front porch. There's a lot of injury and mortality to, to bats from domestic and feral cats. And, of course, from lots of othe wild animals, including hawks, hawks and owls, raccoons, skunks, any, any animal, honestly, that can catch a bat will eat a bat. Any wild animal that will catch a bat. So we see bite injuries. We see crushing injuries of all of the bones that make up the structure of the wing. We see a lot of, a lot of the injuries to basically the bat's fingers, fingers that are making up the structure of the wing itself. So that, of course, has similar features to humans and other mammals, the upper arm and forearm and wrist-area, hands, metacarpals, five fingers, a thumb and forefinger. And toes, since bats are so smaller, are actually very, very fragile.

Dianne Odegard [00:35:52] I think it's interesting to think about bats, small insectivorous bats like these as being incredibly powerful and strong, and yet incredibly fragile under circumstances where they were they can be injured. Those bones break very easily. Bats have very fine bones. They're not like bird bones, which are hollow. They have solid bones. They're tiny. So we see a lot of broken arm bones. We'll see broken forearms, open fractures, bones sticking out. And we don't know exactly why this happens, there are many, many reasons sometimes. Sometimes it's human fear that causes people to lash out at bats and strike at them. Sometimes they just get in trouble because they're young: they're juvenile bats that are learning how to be successful bats and some of them are more successful than others.

Dianne Odegard [00:37:02] So we can actually repair some broken bones. It depends on the severity of the injury. We have veterinarians that we work with who guide us and X-ray, X-ray bats for us where necessary and prescribe medicine for the bats. We can actually repair a broken bone and set it. We can reduce the fracture and set it up with super glue and a splint. And sometimes we have success with that, where the bat can actually fly again from time. Probably more often, the bat does not fly again. Sometimes the, the fracture is so severe that the best thing to do is to actually amputate the arm and wing of that bat. And luckily, Mexican free-tailed bats actually get along quite well with only three limbs. They move well on surfaces. Not all bats do, but they can move quickly and well and they can have, what appears to us, to be a pretty satisfactory life as a permanent resident here, living with other other free-tailed bats. So we just, we do a variety of repairs. There are things that are beyond us that we take to our veterinarian. There are many things, and we learn more and more every year, that we can do on our own.

Dianne Odegard [00:38:53] Sometimes a decision needs to be made about whether a bat can be healed or a quality of life issue about bats, and sometimes euthanize bats that we don't believe will have any kind of quality of life after repair or healing or no possibility of healing. So those are a range of things that we can do.

Dianne Odegard [00:39:24] The best ones are when they come in a little dehydrated, and maybe a little bit thin. And they just need some food and some hydration and they can be released fairly quickly. So it's a range of quick release, to bats that live out their natural lives with us here at the refuge.

Dianne Odegard [00:39:51] So the facility that you use to try to help these bats heal: I understand that there's a flight cage of some kind.

Dianne Odegard [00:40:06] Yeah. Yeah. Flight cage.

David Todd [00:40:08] Can you describe that?

Dianne Odegard [00:40:09] Yeah, it's essentially, a, it was built from a cold frame, from on a farmtech website, farm tech catalog rather. So it looks like a greenhouse structure is, you know, curved. It is curved at the top and straight on the sides. We've made it taller than a typical greenhouse structure would be. And we've made it, let's see, 30 feet. Trying to think, I think it's 50 feet long at its widest, with an extension that we actually built a few years ago. So we have 50 feet on one extension and 30 feet on the other. So it's quite large and accommodates several different species of bats and their flight styles. It's large enough for, for a bat, for instance, like a northern yellow bat, which is a larger bat and a powerful flier. That

bat can do quite well in our flight cage and not be too constrained by not being able to fly freely out, out in the world, if a bat needs to stay here.

David Todd [00:41:41] And, and how do you feed and hydrate these bats?

Dianne Odegard [00:41:47] Well, migration, when bats first come in, we almost always, with very few exceptions, will do a subcutaneous fluid injection in a bat. We'll use a little insulin syringe with a very small needle and, we'll, we'll inject some lactated Ringer's solution underneath the skin, that the bat can absorb over a little bit of time. And it's a very, it's a lot more effective for a subcutaneous injection, than to try to hydrate a bat by mouth. Many, many bats will readily drink water. But Mexican free-tail bats, in particular, really typically do not drink from a syringe of water that we, we try to hydrate them with. They, they just don't want to do it. They are much more likely to be hydrated efficiently with the, with the syringe. So that's how we do that. We do it sometimes over, over a few days, several times, depending on the condition of the bat. Sometimes bats are so dehydrated and so starved that they simply can't be saved. But most bats, when they come in thin and dehydrated, are, are able to get to get better with a little bit of food and a little bit of lactated Ringer solution.

Dianne Odegard [00:43:38] And do they get enough nutrition from the solution or do you have to feed them some kind of a food as well?

Dianne Odegard [00:43:47] No. We feed the bats in captivity here are all use mealworms. The mealworms are gut-loaded in a grain mixture that includes some calcium and a couple, two, three different kinds of grains, we use kick starter and wheat bran and calcium for their, for the medium, for the mealworm. And then as the a mealworm eats, and gets what we call, "gut-loaded", we actually sprinkle those mealworms with some vitamins and minerals before we feed them to the bats. So they have, they have some nutrition from the mealworms themselves and also from the supplements that we, that we add to the mealworms before we feed them either by hand or put them in the coop cups for the bats to catch, and access the mealworms on their own. And we also do a, we make a blended mealworm, soft food that we often feed bats that are nutritionally compromised or, or injured, which is basically mealworm, frozen mealworms, blended in a blender, and vitamins and minerals added to it.

Dianne Odegard [00:45:17] It's fairly disgusting, smelly. And every item of clothing I have stains from it which never come out. But the bats seem to like it.

Dianne Odegard [00:45:34] So those are, typically, what we feed, what we feed bats - either a blended mealworm formula or an actual a live mealworm.

David Todd [00:45:48] Well, and I understand that some of these bats that you've had brought to you and that you've rehabilitated, you've provided in research about aversion for wind turbines. Could you tell me about some of the research that you've helped with in that sense?

Dianne Odegard [00:46:10] Yeah. Texas State University is doing some research in flight cages that they've built down in San Marcos based on our flight cage. So they, they came here and walked around our flight cage. And not built exactly you know, how we built it. What kind of netting we'll use. So they built one that's similar, but larger. And what they're testing are acoustic deterrence for bats, hoping that they will have some success out in the wild, if people, if wind companies can put these acoustic features on their wind turbines. They're hoping that there will be success in deterring the bats from flying so close to the wind turbines. So we've

actually brought our bats, some of our northern yellow bats down to San Marcos and flew them in their flight cage to test their reactions to these acoustic deterrents. There's some acoustic deterrents that have been successful for certain species of bats, to, you know, often avoid turbines when they employ that particular deterrent. Excuse me.

Dianne Odegard [00:47:40] But they had not found, yet, a deterrent for the northern yellow bats, which are some of the bats that are most frequently killed at some wind turbines. The tree bats are killed at a much large rate than crevice-roosting bats. And that's something that we don't think anyone really knows for sure exactly why those bats are attracted to the wind turbines. But one hypothesis is that since they are bats that live in various kinds of trees, they see these wind turbines on the landscape and they go to investigate because they, you know, they probably think it's some type of tree roost. You know, trees are roosts for bats, but they also are little ecosystems all on their own, with insects that fly around them. So they, so we think that the bats probably fly towards them to investigate both for shelter and for foraging.

David Todd [00:48:59] Interesting. Gosh. A whole other world. Something else that I read the Refuge has been active in regarding research on these bats, is how to use radar to understand more about the emergences and the migrations.

Dianne Odegard [00:49:22] Right. Right. Yeah. Yeah. That's fascinating. That's actually my husband's project. I don't participate in that. And I would, I would not know how to participate in that. He's been doing this actually for over ten years on a daily basis, looking at Doppler radar and to see where the bats are roosting and to estimate the numbers of bats that are roosting in different central Texas roosts and beyond. So it's fascinating. And he, I'm sure he talked to you some about that already. But it is something that we have gotten some attention from, from researchers, some who have used some of, some of our data. Bat Conservation International on their Congress Avenue Bridge page, they just go directly to Austin Bat Refuge Congress Avenue Bridge page. So they, they kind of throw that back to us, just like the bats and buildings question questions that they get. So they recognize Austin Bat Refuge as experts in radar research.

David Todd [00:50:50] Well that's a nice compliment. So earlier we were talking about bats and you discussed a little bit of the connection of people's, perception at least, of bats and rabies. I was wondering if you could talk a little bit about the challenge with white nose syndrome and then COVID, and how, how you would sort of describe those two problems.

Dianne Odegard [00:51:24] Right. Well, white nose syndrome, of course, is a disease that, a fungal disease, that has killed really untold millions of bats in the United States since it was discovered in a cave up in upstate New York, in 2000, in the winter of 2006 and '7. And it's, you know, there has been a lot of research on white nose syndrome since then and it continues there. It lacks funding, as much research about wild animals does. But there's been, you know, the disease itself is called white nose syndrome. The cause, the fungal cause of that disease is, is a fungus that grows in cool cave ecosystems. So, so the disease itself, which affects only bats, no other animal that we know of, and not humans, takes hold on cave-hibernating bats. So the fungus is in the caves. It is, it grows well in these cool, moist cave environments. The bats that hibernate in those areas, can get this fungus on them that eventually can burrow into their skin and destroy skin tissue.

Dianne Odegard [00:53:13] It also wakes them up from hibernation. And in an area like New York where they have more of a true winter than we do here in Texas, so the bats are awakened, and their skin is irritated. They've been hibernating, they've depleted much of

their fat reserves and they go out to try to feed. And of course, in the middle of the winter, there's nothing to eat. That's actually how they discovered the disease was finding hundreds of dead bats in the snow outside of a particular cave up in upstate New York.

Dianne Odegard [00:53:55] So it has since spread from one state to, I think, 34 now. It's spread across the country. It's in Texas. The fungus is in Texas. And the disease has been found in some bat species in Texas. Not in a free-tail. We, we believe and hope that Mexican free-tail bats will not actually be affected by the disease. They can have the fungus on them, but not the disease because they're not hibernators. Mexican free-tailed bat are bats that live in some cave where other bats hibernate, but they don't hibernate themselves. They they go into torpor for days at a time, occasionally in the winter. But they're not, they're not hibernating over the course of a winter. So we have not seen any Mexican free-tail bats with the disease of white nose syndrome and that we hope that that stays true into the future.

Dianne Odegard [00:55:01] So white nose syndrome is something that affects only bats and has killed millions and millions of bats. It has been studied. It continues to be studied. There is not a cure for it. However, we are hoping for some immunity in some bat species. The bat, the, the fungus actually came from a, some caves in Europe. Was probably brought to the United States. We don't know for sure, but the assumption is it was probably brought on the clothing or gear of people who had been in these European cave to American caves. So we, we can't really prevent the disease because there's no way to go into the cave ecosystems and spray a fungicide on one fungus that doesn't have a disastrous effect on, on other biological entities in in those complex ecosystems. So it's from, it's a tragedy and it's something that we hope that bats in the United States will be able to fight off before some of these species are actually extinct. There is that possibility.

Dianne Odegard [00:56:39] COVID is something very different. COVID, of course, is a disease that is spread by humans to other humans. And was, we don't know exactly where this particular virus originated. But it is similar to a virus that was found many years ago in a bat, a certain species of bat in China. We watch media to see how people talk about it and try very hard to put out information on our Web site, and as we speak to people while in person or in Zoom programs to say only information that is factual. And it is not factual for people to say that this disease was caused by bats. It can be a fine line and it can be technical. But the most important point for people to understand is that we don't get COVID from North American bats. We get COVID from people.

Dianne Odegard [00:57:58] So, you know, on top of the fears that, you know, many people have had of bats for many reasons, including and often primarily of disease, there is this impression that, this idea that that careless media reports, sometimes spread, that bats are the cause, and that that you can actually get COVID-19 directly from bats, which is absolutely not the case. So we know that bats have a lot of PR problems and it's just, it's just one more to put on our list of, you know, our list of things to talk very carefully and specifically about to the public.

Dianne Odegard [00:59:02] The rabies, the rabies issue, is something that I always talk about in a program. I always have a section about rabies because many, many people, including well-educated people, are not at all clear about the relative risk of getting rabies from a bat. It's really important to point out to people that bats are not carriers of rabies. I think that is the fact that the, or the statement that is so often spread about bat and is carelessly used even by health agencies, about bats being carriers of rabies. Bats are not carriers of the disease. In other words, they do not carry it asymptotically and pass it on to other animals. They can

get it, but they don't get it more often than other species of animals. When they get it, they die from it. And the most important fact to tell people is that the vast majority of bats do not get or have rabies. And the common sense instructions to people and especially children about bats are no different from, from the information that they give them about other wild animals. Don't approach and try to handle any wild animal or unknown domestic animal, including dogs and cats, because a frightened animal might bite.

David Todd [01:00:59] Got it. So let me ask you one more question about sort of people's interaction with bats. I have read and I don't know the truth of this, but that bats' migrations and habits are being affected by climate change. Do you see some evidence of that?

Dianne Odegard [01:01:26] We have. You know, I think, certainly, migration patterns are changing a little bit for bats and and for other animals based on, you know, some, you know, vast amount of interaction between animals and plants and, you know, they're they're affected by the weather, by the, by the climate. But they're also, besides migration, they're suffering the effects of more drought, more frequent drought, more frequent and intense storms and other types of unpredictable weather events. You know, we do see, speaking specifically to just storm and winds, if we get a windstorm, heavy rain or, and along with wind, we know that over the next couple of days we're going to be getting some bats in that have been literally blown out of roosts onto the ground, sometimes with, with broken bones. They can be blown into buildings, blown onto the ground, attacked by predators.

Dianne Odegard [01:02:51] So, yeah, there are, any any kind of effect from climate change that that affects other animals will also affect bats. It's all very unpredictable. So those are the things, those are the things that we see: a little bit earlier migration than 10 years ago, for instance. And injuries, and bats being grounded after storms. I think sometimes storms, I think global warming, climate change, has, has created unpredictable weather. And it probably is less predictable for animals, who seem to have a pretty good sense of weather patterns, it's as unpredictable for them as it is for us. So they can be caught out in a storm. Bats typically do not fly in the rain because their small body size can create a situation where they, they literally become waterlogged and can no longer stay airborne. So we do see that with heavy rains.

Dianne Odegard [01:04:20] Well, let me ask you one more question, if you can spare a moment.

Dianne Odegard [01:04:26] Sure.

David Todd [01:04:26] So I think I spoke to you last week. You had been up late. You're up till four in the morning taking care of your charges, your bats, and helping them recover. And I think that that kind of dedication and passion for bats, or any animals, is, is pretty extraordinary. And I was wondering if just as a place to close, if you could talk about why it is that you do care about these bats and work so hard to protect, and restore them, and educate people about them.

Dianne Odegard [01:05:10] Well, you know, the, you know, the sort of general answer to that is, you know, is that is, you know bats have, of course, great economic value. You know what, what we say that is sort of the obvious is that, you know, they are important to our environment. They are good for humans to have around. They're important to our environment. They are, they do, you know, their habits are, generally speaking, very good for the human population.

Dianne Odegard [01:05:45] But their intrinsic value is something else. They've been on this planet for so much longer than humans have. They, we have to have a few bat fossils from over 50 million years ago. So bats have been around here longer than we have, by far. And they simply, they simply deserve to have their place. That's the real, you know, none of that is really personal. I mean, that's all, those are all true things.

Dianne Odegard [01:06:27] You know, my personal feeling is difficult to actually put into words why this matters to me. Like I said before, I'm, I'm fond of animals in general. I've always enjoyed working with wildlife, but bats are so surprising and so fascinating in so many ways that, every bat that comes in is an individual that is different from every other bat. And that is surprising to a lot of people. It's not so surprising to us anymore because we've seen that over and over and over again over the years. They are individuals just like we are. And, we, our heart goes out to these animal probably partly because they're so small and so fragile. And I think along that line, one, one educational tool that is very, very powerful is showing people a bat up close in a human hand, a gloved human hand. Because people really get suddenly a sense of, oh my God, not only are they not, you know, this gigantic, frightening vampires of myth. But they're tiny and fragile. I think people get a sense of that fragility that, that really appeals to the human heart.

Dianne Odegard [01:08:27] And as an animal, bats, Chiroptera, the order of all bats on the planet, it's so demonized by people from all over the world. There are myths and stories about death from probably every country that, that actually has bats living there, which is most, well, all countries, really. There's just so many stories in people, you know. Cultural histories that treat their bats as dangerous and scary.

Dianne Odegard [01:09:15] And so they're underdogs, bats are. They need, they need some help to get the reality out there about what they're really like. And I'm always a sucker for an underdog. They offer all of the, all of those things. All of those issues, the fact that they are amazing individuals, the fact that they are vilified by so many people. The fact that they are in danger from so many human-created, you know, dangers. You know, from wind turbines, too, you know, habitat loss, to construction and noise and lights: so many things that we do can have an adverse effect on bats. Kind of a question of trying to even up the score a little bit.

Dianne Odegard [01:10:32] I don't know.

David Todd [01:10:33] Well a good goal.

Dianne Odegard [01:10:35] Yeah.

Dianne Odegard [01:10:37] You gotta. You just have to help them.

David Todd [01:10:42] Well, you've been so generous with your time. Thank you. Is this, just to close out, is there anything you'd like to add, before we say goodbye?

Dianne Odegard [01:10:50] Well, just that I hope that the public will be very discerning when they read articles about bats. I hope that people will be careful in terms of the sources that they go to when they look up information about bats. Be very careful of Internet searches. Be very careful of anything that says bats commonly can bite people without the person feeling it. You will see that in many types of Internet searches and in some, in some, from some sources that should know better. Use common sense. And don't be afraid of this little animal that is

such a benefit for all of us. But use common sense. Don't grab a bat, any more than you would grab a raccoon or grab any other wild animal. Don't get bitten by a bat. Enjoy them at a distance and be amazed at their skill and their beauty. And enjoy them.

David Todd [01:12:26] All right. Diane, you've been so kind to do this. Thanks a bunch. I learned a lot, and it's a nice addition to the archives.

Dianne Odegard [01:12:39] Thank you very much.

David Todd [01:12:41] Well, I wish you the best. I hope that you get to bed early tonight. Not too many hungry bats waiting on you.

Dianne Odegard [01:12:49] Yes, I'll be feeding bats as soon as we hang up.

David Todd [01:12:53] All right. Well, I'll let you get back to them. Thank you so much for your time.

Dianne Odegard [01:12:58] You're very welcome, David. Thank you very much. We'll talk to you later.

David Todd [01:13:03] All right. I'd like that. Thank you. Bye now.

Dianne Odegard [01:13:05] Bye.