TRANSCRIPT
INTERVIEWEE: Hilary Swarts
INTERVIEWER: David Todd
DATE: March 10, 2022
LOCATION: Los Fresnos, Texas
SOURCE MEDIA: MP3 audio file
TRANSCRIPTION: Trint, David Todd
REEL: 4098
FILE: Ocelot_Swarts_Hilary_LosFresnosTX_10March2022_NoiseFiltered.mp3

Google Voice [00:00:01] This call is now being recorded.

David Todd [00:00:04] Well, good morning.

Hilary Swarts [00:00:06] Hello. Good morning. How are you.

David Todd [00:00:08] David, here. Thank you for going to Plan B. And I look forward to doing this interview with you.

Hilary Swarts [00:00:18] Yeah, I'm so sorry for the delay and the headphones, but hopefully we can turn it around.

David Todd [00:00:26] We're doing fine. This is, this is absolutely okay.

David Todd [00:00:31] So let me explain a little bit about how these interviews typically go. Um, I would ask for a couple of minutes at the beginning of the interview to just introduce the project, introduce the time and date, and introduce you, of course. And, and then the thought is that I would just go through the questions. And, you know, I try to speak as little as possible. So if there's dead air, don't be alarmed. I'm still here. But this is really about you and your story, and I try to stay out of the way as much as possible, except just to offer sort of cues for the next question. That way, it's, it's, you know, we can cover as much ground as possible.

Hilary Swarts [00:01:21] Okay.

David Todd [00:01:21] Does that sound okay?

Hilary Swarts [00:01:23] That sounds great.

David Todd [00:01:24] All right. Well, with that, let me rattle off a few things at the beginning and then we'll, we'll start with some questions for you.

Hilary Swarts [00:01:34] Okay.

David Todd [00:01:36] All right. Well, good morning. I'm David Todd. And I have the good fortune to be with Dr. Hilary Swarts. And with her permission, we plan on recording this interview for research and educational work on behalf of a nonprofit group, the Conservation History Association of Texas, and for a book and a website for Texas A&M University Press, and finally, for an archive at the Briscoe Center for American History, which is at the University of Texas at Austin. And she would have all equal rights to use the recording as she sees fit, too.

David Todd [00:02:16] And I just want to make sure that's OK with you.

Hilary Swarts [00:02:19] That's great. Thank you.

David Todd [00:02:21] Great. Okay. Well, then let's begin.

David Todd [00:02:25] It is Thursday, March 10th, 2022. It's about 10 o'clock in the morning, Central Time. My name, as I said, is David Todd, and I am representing this nonprofit group, the Conservation History Association of Texas. I'm in Austin, and we are conducting a remote telephone interview with Dr. Swarts, who is based at the Laguna Atascosa National Wildlife Refuge, which is near Los Fresnos, east of Harlingen, Texas. Dr. Swarts is a wildlife biologist at Laguna Atascosa National Wildlife Refuge, and she has wide responsibilities for research and conservation for the ocelot. Today, we'll talk about her life and career to date, and especially focus on her work with the ocelot, just as an example of what she's been busy with.

David Todd [00:03:26] So I just wanted to, first of all, thank you and then see if we can launch into some questions.

David Todd [00:03:37] Let's start with your early years. If you would be kind and tell us about your childhood and your early, early years, that would be great and I'm particularly curious if there were some people or events in your life that might have influenced your interest in animals and in ocelots in particular.

Hilary Swarts [00:04:04] So, I guess, going back to the very beginning, I was born in Paris, France. My father was working overseas for a time and we moved back to the United States when I was about a year and a half to Greenwich, Connecticut. And I was a pretty regular kid. Like most kids, I loved animals like crazy. I went to a summer camp every year and had a lot of outdoor time and had, I think, developed an appreciation for nature early, but didn't really think about career so much. And certainly, I you know, I watched the Wild Kingdom from Mutual of Omaha with Marlin Perkins and loved that kind of thing.

Hilary Swarts [00:05:01] But it really wasn't, it probably wasn't until my college years that I started thinking about, you know, what I'm going to do with my life and, and heading down that road of animal behavior and conservation.

David Todd [00:05:22] So there wouldn't be anybody or event in those, you know, childhood years that was sort of extraordinary? It's just maybe sort of a gradual process. Is that fair to say?

Hilary Swarts [00:05:38] I would, I would say that's true, although I, um, my mother was fantastic at exposing us to, my brother and me, to as much as possible. So we went into New York fairly often and went to the Museum of Natural History countless times, and I think that probably had an effect that I didn't really appreciate at the time. And also trips to the zoo, you know, sort of standard, standard stuff. But I think it kind of wheedled its way into me in a way that would manifest later.

David Todd [00:06:26] That's so interesting, you know, there's probably experiences that lots of kids have, and it registers with some and maybe passes others by.

David Todd [00:06:39] So I understand that you earned a B.A. in Biological Anthropology from Pomona College and then later a Ph.D. in ecology from the University of California at

Davis. And you know, maybe you can tell us if there were, again, any events or people during that period of your life that might have kind of piqued your interest in nature and science, and again, the ocelot that you work with these days?

Hilary Swarts [00:07:11] Yeah, so to be real frank, I've always really kind of loved all the animals. It's not infrequent when I get an application from an intern that it starts with, "I have always loved big cats", or something like that. I'm afraid to say that that I didn't have any particularly strong affinity towards ocelots versus anything else. I think I just liked the whole concept of animal behavior, and I think that was really the driving force for me, you know, the, the, the different elements that go into it.

Hilary Swarts [00:07:51] And in fact, the degree I got from Pomona College was a major that I designed myself. It wasn't an existing major and I had wanted to call it, "animal behavior". But the registrar at the time, I think, didn't feel that sounded fancy enough maybe, so they suggested, "biological anthropology". But in designing that major, I really wanted to draw from different areas, and there were probably three professors who had the most profound effect on the direction I went.

Hilary Swarts [00:08:30] One was an anthropology professor, Dr. Jim McKenna, who, taking his class on primate social behavior, I think was sort of the spark that really got me excited. I mean, when, when you know, when you're younger and you think of careers of animals, you think veterinarian and zookeeper, and you don't realize there's a whole realm of other careers that are possible there. So that primate social behavior class really, really fired me up to think, "Oh, wow, you can, you can actually, you know, professionally study this kind of thing." So that was really exciting. I ended up taking pretty much every class that he had to offer, and he was one of the three advisors on my committee because when you do your own design of a major, I think they want to make sure there are representatives from, from each field.

Hilary Swarts [00:09:30] So another professor who had a big impact on me was a neuroscience professor in the psychology department, Dr. Richard Lewis. And he really kind of opened my eyes to the way behavior and, and the brain interact. And that was really exciting to me. And even though that was really more focused on humans, it was clear there were a lot of parallels to other members of the animal kingdom.

Hilary Swarts [00:10:01] And probably the most influential professor I had there was a biology professor named Dr. Rachel Levin, who was my primary advisor in my undergraduate years, and her focus was really very much on animal behavior.

Hilary Swarts [00:10:17] And so I designed that major sort of bringing in elements of psychology, anthropology and biology to, I guess, to just address what I was interested in. Pomona College is an amazing college, but it's also a small, liberal arts college, so you don't necessarily have the diversity of majors and courses that you might find at a larger university. So that was sort of my solution to getting what I wanted, I guess, academically, and to meet my interests from my undergraduate time.

Hilary Swarts [00:11:00] And then I went, first semester of my senior year, I went on a study abroad program to Tanzania, and the focus of that was wildlife and conservation. And that was directed by Dr. Meredith Kennedy, who was a veterinarian, but also, really, a range of interests, and that semester abroad was definitely life-changing. It really showed me what was out there. We were able to interact with a lot of people doing research in wildlife and conservation, and it was also really eye-opening to me because I think I went over to Tanzania

thinking, you know, wildlife or bust. And when you're there and you meet the people whose livelihoods and going back generations livelihoods have depended on wildlife. You realize it's not such a simple picture of just protect all the wildlife and leave the people out in the cold.

Hilary Swarts [00:12:05] So I think that was really an important experience, both just for opening my eyes to the world. I mean, obviously, what I'm going to see in Tanzania is a lot different than what I'm going to say in Connecticut or California. Um, and again, it kind of showed me there are a lot of different paths you can take to be working with animals. Um, so that was I mean, that was mind-blowing all together.

Hilary Swarts [00:12:34] Um, and then at UC-Davis, where I got my Ph.D. in ecology with a focus on conservation, um, my advisor, Dr. Rosie Woodroffe, was really focused on conservation biology and had projects in in England and in Kenya that dealt with wildlife conservation. And that was really helpful for me, understanding what a career like that might look like.

Hilary Swarts [00:13:06] And also, UC-Davis is an enormous, you know, research university. So there, there was a lot to take in. It was so different from my undergraduate experience in that way.

Hilary Swarts [00:13:19] Um, other professors who had a huge impact on me were Dr. Sharon Lawler, who focuses on community ecology and was an incredibly supportive mentor through my somewhat protracted graduate career. And another professor was Dr. Andy Sih, who works on behavioral ecology and some of the more, I guess, quantitative aspects of that. And he is a very high-energy, enthusiastic person and, and that was, was contagious and very inspiring for me. So, I mean, there are probably countless others that, that have contributed to my interest and my ability to, to gain experience. But those are probably the main, the main culprits, if you will.

David Todd [00:14:19] Well, that's, that's great. It's always interesting how, um, you know, courses aren't just textbooks and lab experiments, but there is this personal aspect, you know, of mentors and friends and colleagues that make these trips through college and grad school really full.

Hilary Swarts [00:14:43] Yeah. And I think, I think also because Pomona is such a small, education-focused college, you know, I was having classes with the professor rather than a TA or a graduate student. And you know, there might have been five of us in a class. So it really afforded me the opportunity to have, you know, have discussions with these really accomplished faculty members in a way that I think I didn't necessarily realize at the time was very helpful for me, from a confidence perspective, so that when I got to graduate school, you know, a faculty member was not necessarily as intimidating because I had had that real one-on-one experience already.

David Todd [00:15:33] That's, that's really interesting. And I guess that maybe makes it easier to learn if you feel like you can approach these, these teachers.

David Todd [00:15:43] So clearly, you've had a lot of wonderful formal education. And I think you mentioned that you had a little bit of informal teaching as well - this visit with Wild Kingdom and Marlin Perkins.

Hilary Swarts [00:16:01] Yeah.

David Todd [00:16:03] I know that can sometimes be really powerful, that they, these TV shows and movies and books, that are just, you know, general readership titles. Are there any like that, that were important to you?

Hilary Swarts [00:16:20] I think, let's see. In terms of books, I did a lot of reading when I was young, but I'm not thinking of any titles that necessarily jump to the forefront in terms of this. I will say, as you mentioned, you know, any of those sort of animal-related programs, which when I was younger, were far fewer. Those were the days where if you wanted to watch a show, you actually had to be sitting in front of the TV at the time that the network had scheduled the show. Right? It's an entirely different world. So I would, you know, make a point of, of being right there in front of the TV when Wild Kingdom was coming on, or if there was some sort of special about wildlife.

Hilary Swarts [00:17:06] And then I was really, really inspired by "Gorillas in the Mist", which was, you know, an incredibly popular movie. And of course, with the mystery of the murder of Dian Fossey, there was a whole other element to it. But I just felt like I could have watched those gorillas forever, and I was so captivated by the idea that that could be somebody's career. And so I think that had a really big influence on me.

Hilary Swarts [00:17:41] And in fact, years later, I had the huge good fortune to actually work with that same, with those same gorillas in Rwanda as a one-year job, as a field supervisor and researcher and get to actually experience the gorillas, you know, in person, and it was sort of, I was 28 and here I had read kind of this lifelong dream and then, you know, what do you do after that? But, but it was, you know, it was certainly something I wouldn't have even really known about or understood was a possibility if I hadn't seen "Gorillas in the Mist". It feels silly to say it now.

Hilary Swarts [00:18:33] Well, I guess that's part of, of a good education, like what you've had, that it's not just telling you about the world, but, you know, encouraging you to realize that so many things are possible, different routes.

David Todd [00:18:48] Well, so you have taken many routes and it's so intriguing, I mean, from, I guess, from Rwanda to Tanzania to Connecticut to France to California and now to South Texas. And I'm curious if you could help us understand your work there, your life there. And maybe a place to start would be just to hear about your, your first encounter with an ocelot.

Hilary Swarts [00:19:19] Well, I think I had probably seen them in zoos before, but I have to admit that, you know, they didn't stand out for me as something I was particularly drawn to. Again, I'm kind of a "all creatures great and small" kind of person. You know, I don't care - feathers, fur, scales - it's all interesting to me. So I had been working as an intern with the Fish and Wildlife Service regulatory branch in Sacramento while I was in graduate school, and that position came up on my computer for an ocelot biologist here in South Texas. And I was wrapping up my degree and kind of looking for my next step. And I thought, "Well, let me apply for this. There's no way I would get it, but it's good for me to kind of get my ducks in a row and be ready to be submitting applications.".

Hilary Swarts [00:20:20] And very much to my surprise, I did get the job, and all of a sudden was moving to Texas, which was not something I had ever expected. But my first really memorable encounter with an ocelot was the first time I was present during trapping, and we

caught an ocelot and anesthetized it in the trap and then carried it over to the work-up table. And I can still remember the weight of that animal in my arms and just being kind of overwhelmed by it, even anesthetized, its immense beauty and strength and, and as weird as it sounds, the reality of it.

Hilary Swarts [00:21:09] It's like this amazing animal. And it's running around here in South Texas and, you know, they're very shy animals. I don't like to use the word "shy". I guess they tend to avoid human areas. So the chances of, you know, kind of anyone happening to see one are, are pretty rare. And there, there I was with one in my arms and it was just, it was just fantastic, it was transformative.

David Todd [00:21:41] You know, I imagine it must be really special when, you know, you see animals on TV or behind bars in a zoo, but to actually touch one and carry one and be responsible for one is a, it must be really powerful. I can only imagine.

Hilary Swarts [00:22:02] Well, yeah, very much so. Yeah.

David Todd [00:22:07] Well, you know, we're laypeople here, unlike you, and I was curious if you could just sketch out the life history of an ocelot, how it goes about its, its business of finding food and shelter and reproducing and so on.

Hilary Swarts [00:22:28] So I could probably talk about this for far longer than anyone would want, so I'm going to try to keep it pretty brief.

Hilary Swarts [00:22:39] Like most cats, except for lions, ocelots are generally pretty much solitary animals. So, you know, you're not, for all of my interest in social behavior of animals, the social behavior of ocelots is obviously much more nuanced because they're not traveling around in groups.

Hilary Swarts [00:23:01] They're generally nocturnal. We do get some occasional daytime photos on remote cameras, but for the most part, they really are doing the business of being an ocelot and taking care of their needs while all of us are asleep.

Hilary Swarts [00:23:20] So, that sort of, you know, each of these things sort of adds to the challenge of studying them. Right? They're all by themselves, and they're in the dark, so that's a, that's already harder to find.

Hilary Swarts [00:23:38] Ocelots in South Texas are very much habitat specialists, which is to say that they're really loyal to one habitat type, which people down here will call it just "brush". But it's, it's known as "Tamaulipan Thorn Scrub" for the state of Mexico, just to the south, the south of us here - Tamaulipas. And it is incredibly dense habitat. It's, a huge portion of the species have thorns - some little mean hooked thorns, some long mean toothpick thorns. But it's definitely, it's like a wall. I mean, you can't, you can't walk through it. When we have to go in to retrieve a collar or something, we're literally crawling on our bellies because it's such dense habitat.

Hilary Swarts [00:24:31] But that also affords the ocelot, you know, great protection. And it supports an enormous prey base because there's so much structure to the habitat that there's a lot of niches available for different kinds of prey.

Hilary Swarts [00:24:48] So sort of along those lines, in contrast to being habitat specialist, ocelots are very much diet generalists. So if it's small and they can get it, they'll pretty much eat it. So rats, mice, birds, reptiles, anything they can kind of get, they will eat. So they're really, they really benefit from that thorn scrub habitat because it's a, it's a habitat that's used by so many species, tiny to large.

Hilary Swarts [00:25:26] So the other thing that's kind of cool about them that sort of plays into the diet thing is ocelots are one of three species of cat whose back ankles can actually rotate. So, you know, like domestic cats, you always see kind of the, the trope of the cat caught in the tree and the fire fighters coming to get it down. But these guys can actually do a controlled descent down a tree. And, and they're tree climbers, and they're also swimmers, although the South Texas habitat doesn't have as much sort of tall trees as some of the other places ocelots are found.

Hilary Swarts [00:26:08] But the rotating ankles mean they can be climbing up a tree and looking for prey, but also looking for prey when they're climbing down a tree. And so it kind of doubles their ability to detect, you know, a yummy treat somewhere. So that's a kind of cool feature of them.

Hilary Swarts [00:26:28] Um, as far as sort of their social structure, you tend to have one large male home range that, that contains the home ranges of two or three females, and that male is pretty much going to be the sire for any of the offspring those females produce. A lot of cat species have kind of more complicated courtship, where the male, you know, spends several days with the female and mate multiple times and then hangs around to make sure it sort of takes before any other males can get in there, because a cat can be, a female can have her eggs fertilized by multiple males. So the idea is to, right, make sure that you're the only one doing the fertilizing.

Hilary Swarts [00:27:28] Ocelots are a little unusual in that, in that they really are kind of a one-and-done type scenario. So basically, there's a mating event and then that's pretty much it. And there's not sort of this extended courtship or mate guarding that you may see in other cat species.

Hilary Swarts [00:27:54] And I think something that is really important in thinking about ocelot recovery and growing the population is even when the conditions are absolutely perfect, right? Totally protected, great prey base, low level of competition with other animals like bobcats, coyotes. Ocelots have a very slow reproductive rate. So people think, a lot of times you think of a domestic cat, and if you don't get your cat spayed, it's only a matter of time before you have a house full of cats. They're really prolific breeders.

Hilary Swarts [00:28:32] Ocelots are very different from that. They breed every kind of every couple of years and they'll have one offspring, maybe two offspring, occasionally. But for the most part, you're talking about a female really in the course of her life, you know, maybe having, gosh, I should have done this math in advance. Let's see. Maybe being able to have six or seven offspring, and the likelihood that they'll survive, of course, is not 100 percent.

Hilary Swarts [00:29:07] So when you have a reduced population size, again, even in the best conditions, it's going to take some time for that population to build up, because the reproductive rate is sort of a limiting factor.

Hilary Swarts [00:29:23] Um, and then the offspring stay with their mom for like a year and a half to two years. There is a lot to learn to be a successful wild ocelot. And so that extended period of time is really important for them gaining the skills to ultimately become independent. So, you know, you're talking about learning how to recognize prey, capture prey, eat prey before it scurries away. How to, you know, be aware of potential competitors and avoid confrontation with them, with, like I said, bobcats, coyotes, the occasional mountain lion, avoiding alligators when you go to have a drink at the watering hole, rattlesnakes, scorpions, tarantulas. So there's a lot out on the landscape. And it takes time for, for the young ocelots to really harness those skills to be successful.

Hilary Swarts [00:30:36] And generally, once the offspring has sort of reached that point of, of being able to operate independently, then we see the males as the dispersers, and the females, the female offspring, tend to sort of set up shop relatively near the home range where they were born. So because of that, the males end up facing a lot more risk. Right? the male-male competition is strong because, you know, being the dominant male means having access to multiple females and not being the dominant now means having access to zero females. So there is a lot of, there's, there's pretty strong male-male competition.

Hilary Swarts [00:31:29] And then when you disperse, especially if you're talking about a landscape that isn't contiguous habitat, that is fragmented, you know, they're going to they're going to encounter risks, or risks, I guess, risks on the landscape, like crossing roads and vehicle mortalities are definitely a huge problem for ocelots. We find that the primary victims of vehicle mortalities are these sort of dispersal-age males.

Hilary Swarts [00:32:02] Um. So I think that's kind of a, I don't know, a broad picture of sort of the big pieces of the natural history of these guys.

David Todd [00:32:14] That is really nice and very concise. I know that you could go on for, for, as you said, a while.

Hilary Swarts [00:32:22] Yes.

David Todd [00:32:24] In such rich detail.

Hilary Swarts [00:32:26] And just also in terms of shelter, these guys are kind of interesting. They don't have dens really. The way the landscape is, it's, you know, it's a flood plain. So it's flat. So there aren't a lot of nooks and crannies. So in general, you're going to find that a given ocelot is spending the night in a different part of their home range every night. They don't seem to have a, you know, they probably have places that they consider more safe within that home range, but they don't have a specific den site.

Hilary Swarts [00:33:00] When the female has offspring, she'll have sort of a den site. But really, it seems to be that that's just, um, you know, a little piece within that thorn scrub habitat. And as is typical with a lot of species, she's going to move that, that kitten every two or three weeks. And the reasoning behind that is thought to be number one, predator avoidance. She doesn't want anybody finding her kitten. So keeping, keeping mobile is helpful. And also keeping any kind of ectoparasites from building up. So you don't, you know, you start to get fleas and ticks attracted to, you know, this poor little ocelot. So doing that, um, movement kind of helps with both of those issues.

David Todd [00:33:55] Well, they clearly are experts in their world.

David Todd [00:34:00] Well, you touched on one of the problems that these ocelots have faced - you know, issues of habitat fragmentation and then the connected one of road collisions as the males disperse. You know, given how rare these ocelots are, maybe that's something to focus on: is what's caused their rarity and their decline over the past number of years? Could you maybe talk to us a little bit about that?

Hilary Swarts [00:34:35] Sure, sure. The real, the real biggest threat to this species here in South Texas is habitat loss, and sort of two parts of habitat loss end up driving the other factors that, that that are sort of population risks to these animals.

Hilary Swarts [00:34:59] So there's overall loss of habitat. I have heard that there's about five percent of this Tamaulipan thorn scrub left in South Texas since humans have started, you know, for the past 100-plus years, developing for agriculture, for residential, commercial purposes, oil and gas extraction, etc. So the overall loss of habitat means an overall loss of available spaces for these cats. And because they're so loyal to this habitat type, you know, when you reduce that habitat, ultimately you're going to have a lower number of ocelots in your population. They are not, they're not going to suddenly just huddle closer. They need their space and they, you know, defend those home ranges. So you can't, you can't fit ten ocelots into one ocelot space. That's just not going to work.

Hilary Swarts [00:36:02] But the other big part of that habitat problem is not just the overall loss of habitat, but, as you mentioned, the fragmenting of the habitat. So, you know, essentially once you start fragmenting habitat, especially for a species that will only use that type of habitat, every time they're trying to move from one patch to another, they run the risk of, of encountering something outside of their comfort zone, I guess you could say.

Hilary Swarts [00:36:36] And so that, kind of circling back, that gets into the whole vehicle collision issue. Right? So if you're trying to go from habitat patch A to habitat patch B and in between there is Highway 100 that will take you out to South Padre Island, or Highway 77 that'll take you from Central Texas down here to South Texas. Those are, those are huge threats and especially you're talking about a little, a relatively little cat. The probably biggest males we've clocked in have been at about 25 pounds, so that's still relatively small. You know, darting out at night into the roadway. So again, vehicle mortality is the largest known source of mortality for individuals that we've tracked.

Hilary Swarts [00:37:33] Obviously, if an ocelot dies out in the brush and we don't have any way to track that, we're not going to necessarily be able to determine a cause of death. But, but certainly vehicle collisions are, are a major contributor to ocelot mortality.

Hilary Swarts [00:37:50] And the other thing that happens is with this fragmented landscape, you also get isolated population. So we have a population of ocelots here at Laguna Atascosa, and in the sort of surrounding environs, and then up in the ranch country, there is also a population of ocelot. Um, but there's not really any connectivity between them. So you're talking about these small, isolated populations with restricted gene flow. Um, and of course, then you get into issues like inbreeding, which can have, have its own set of problems.

David Todd [00:38:37] Boy, it's, it's so worrisome and I'm sure it's a problem that you deal with daily, and problems that are connected and cascade.

David Todd [00:38:52] You know, there have been a couple of other things that I've heard, and I'd love to hear your thoughts about, that relate to ocelots and their decline. One is the fur trade, which I guess was more of an issue in the past, but pretty severe nonetheless. Can you tell us a little about what you know about the, the fur industry and their interest in ocelots?

Hilary Swarts [00:39:17] Yeah, I'll say this. My knowledge of that is not very extensive. But basically in the '60s, sort of these, these animal print fashions became very much in demand. You know, you can like picture one of Jackie O's little pillbox hats, pillbox hats or something like that. And so the craze for these animal prints, especially coats from ocelot, from leopard, from just about anything somebody could catch that had one of these sort of quote, unquote exotic prints was pretty devastating to a lot of cat populations. And ocelots were, were no exception.

Hilary Swarts [00:40:10] And I think the other thing that's, particularly, to me, that was shocking about, about what I've learned of it is that because they're such small cats, relatively speaking, you might need 40 individuals to make a coat. So, considering that we estimate that there are about 80 or fewer ocelots left in Texas, you know, that's like two coats' worth. I mean, it really is, a really shocking scale.

Hilary Swarts [00:40:41] And I'm not sure with that fur trade how, how many pelts would have been coming from Texas and how many might have been coming from Mexico and further south. But the numbers are in the hundreds of thousands. And so obviously that would be a pretty devastating effect and kind of going back to this low reproductive rate, even when that poaching pressure for their pelts eased up, you're still talking about a slow recovery time because of that slow reproductive rate.

Hilary Swarts [00:41:21] So certainly, I think, I think several factors contributed to poaching becoming a much less worrisome threat. Fashions change. Right? So to some extent, there was, there was a fad and then that, you know, that trend subsided and so the demand went down.

Hilary Swarts [00:41:47] But there were also legal protections like the Endangered Species Act being passed in the early '70s and the International Union for the Conservation of Nature, which has the CITES, CITES treaty, which is a voluntary treaty that nations sign on to in the interest of protecting animals that are, that are at risk.

Hilary Swarts [00:42:18] So I think all of those factors really contributed, but I will say, it's been very interesting in my time here, probably, I don't know, five, seven times, I've been contacted by someone all over the United States and says, "Help." You know, "I inherited this ocelot coat from my grandmother or my aunt or something, and I don't want it and I don't know what to do with it." So, you know the, that sort of artifacts from the fashion craze, I wouldn't be surprised if there aren't many closets and attics across the country that have, you know, the remnants of that animal print fad.

David Todd [00:43:09] Boy, that is so interesting like this at the tail end of a fad that's left the fashion magazine pages but put these, these furs, just musty and ...

Hilary Swarts [00:43:23] Oh, yeah.

David Todd [00:43:24] They still survive.

Hilary Swarts [00:43:25] And we use, when we can, we use those furs just as kind of educational programs and, and I guess I would say I'm pleased to report that, yes, there is occasionally someone who says, "Ooh, that's, I want that." And I'm like, "No, that's not what we're going for here." But for the most part, people are shocked and appalled. And when they hear the amount of cats that went into a given coat, you know, they're even more shocked and appalled. So hopefully that sort of mentality of, of just total exploitation for fashion is, is increasingly unpopular.

David Todd [00:44:10] Yeah, it's interesting how people's attitudes change. Maybe they just learn a little bit more.

David Todd [00:44:19] You know, I remember seeing pictures in years past of Salvador Dali with a pet ocelot, and I'm curious if he was just a, an unusual person (I think unusual in a lot of respects).

Hilary Swarts [00:44:39] I think so.

David Todd [00:44:41] You know, was that a widespread phenomenon to have ocelots as a pet, and was that a big issue in its decline in the wild?

Hilary Swarts [00:44:50] You know, I'm not sure. I wouldn't, I wouldn't feel comfortable in speculating on how much that had an effect on decline. But it was, I mean, relatively widespread. As you mentioned, Salvador Dali, he had an ocelot named Babou that went with him everywhere. I read that Babou was a present from the Colombian president to Salvador Dali, but I would, I would fact check that. And from other things I've read, the cat never seemed particularly happy. And I know that's hard to tell with cats because they're not terribly expressive. But I guess it was always kind of trying to escape and trying to run off. And there are, you know, various reports of people having to go try to, try to find this cat.

Hilary Swarts [00:45:49] Um, so I don't know a ton about this, but I know I have at least one book, maybe a couple of books, in my office of how to care for your ocelot or margay and they're guides for pet owners for those species. And a margay is a lot like an ocelot, but just sort of not found here in Texas, but down to the south and more arboreal. So they're just in the trees a little bit more, but very similar looking. Um, and I am picturing that book, and I know there's like a picture of an ocelot, like crawling out of a Nordstrom shopping bag.

Hilary Swarts [00:46:29] Um, so, you know, it was done. I don't know how prevalent it was. I can only imagine that, um, like almost pretty much every other wild animal people try to make a pet, it probably seemed like a good idea when it was a little kitten. And as it grew up, it probably seemed like an increasingly bad idea. You know, they're, they're gorgeous, but they're strong and they have sharp teeth and sharp claws, and they're wild. They don't have, you know, they don't have any domestication in them. So they would be pretty dangerous for, for someone to have in their house, you know, probably tearing up the furniture.

Hilary Swarts [00:47:13] When people ask me about it, I, you know, well, what about having an ocelot for a pet? And I say, "Do you like having a face?" Because they're, you know, I mean, I have, I have regular domesticated cats, and one of them, you know, he'll get saucy sometimes and swipe at me, and that's a little teeny cut. These guys would be capable of really pretty severe injuries. So either people, you know, would realize that and then try to give them away to zoos or, you know, sometimes they would have the pets declawed, which is a really cruel process and sort of takes away from the essence of what it means to be a cat.

Hilary Swarts [00:47:54] Um, I know now every once in a while, we, our law enforcement branch, will get a call. And if you go online, you can see there are people who are trying to sell ocelots. But for the most part, I think that's really fallen out of favor.

Hilary Swarts [00:48:12] There are a lot of domestic cat breeds that have been bred to mimic some of the fur patterns of the, of the wild cats that people find so intriguing. But I think, you know, first of all, it's illegal. So, you know, I think in some states, there's a lot of variation state to state on, on the legalities of having wild animals in captivity or as pets. And in some cases for educational purposes, there's allowances. But I think for the most part, that has really, really, the idea of having ocelot as a pet has really mostly gone the way of the dinosaur. Thank heavens.

David Todd [00:49:00] OK. Something else that again, I've read, but not entirely understood and would love your advice about..

Hilary Swarts [00:49:13] Yes.

David Todd [00:49:13] Just the, the effect of habitat change down there on the ocelot. And, and I gather that South Texas has seen waves of, of agricultural change from sheep in the early days, cattle throughout, cotton farming, you name it. But the bottom line has been removal of this thorn scrub. Is that, is that right?

Hilary Swarts [00:49:46] That's absolutely right. I think we're talking about even going back to, you know, mid-19th century that, you know, brush started being cleared. I mean, you know, as I mentioned, it's, it's not, it's not particularly hospitable to humans. You can't, I mean, you can't move in it. Right? So if you want to have a house, if you want to have a farm field, if you want to graze your cattle, none of those activities is compatible with the presence of brush. So I think that's really the basis for that enormous reduction over the years.

Hilary Swarts [00:50:32] And I think you're right from what I understand, it's sort of come in different waves. Um, but all of those waves have ultimately resulted in, you know, like I said, maybe about five percent of that habitat left in South Texas, which is so unfortunate not just for ocelots, but because it hosts hundreds of species. And so, you know, when I talk about ocelot habitat loss, I, I try to remind people, we're not just talking about this one cat, we're talking about an entire ecosystem, you know that, that is really interwoven with this habitat type.

Hilary Swarts [00:51:12] So that kind of long-term, ongoing, relentless brush clearing has been, you know, a huge, THE huge factor in the ocelot population decline.

David Todd [00:51:33] Something I don't entirely get, too, among a lot of things.

Hilary Swarts [00:51:40] Yes, you and me both.

David Todd [00:51:42] Okay, well, thanks, we're in somewhat the same boat. But my reading was that in the early days there was there was a lot of, of prairie in South Texas and um, there was a lot of brush encroachment, particularly in mesquite and huisache, that came in after some of the first aggressive grazing.

Hilary Swarts [00:52:13] Yes.

David Todd [00:52:14] And I don't know if that's, it seems sort of paradoxical, because on the one hand, there's clearing going on, which is removing thorn scrub. But the other hand, one of the weird collateral effects of grazing is that, you know, you can remove the prairie, then you get the hardwoods coming in. How do you weigh those two trends?

Hilary Swarts [00:52:39] So I think there is a lot of nuance in there: that's Hilary speak for, this is going to be a longer answer than you wanted. Um, but uh, the, the, there are a couple of factors in there. Yes, there's definitely a lot of natural prairie down here as well. Um, and, and shrub encroachment is, is sort of a natural process to some extent, but also can be strongly affected by whatever sort of human activities are going on. But basically, when you clear an area to establish pasture land, let's say, and then you start to get shrub encroachment, you mentioned sort of the two really early successional species that are great at taking advantage of that - the mesquite and the huisache.

Hilary Swarts [00:53:34] But those don't really turn into thorn scrub. You basically end up with kind of a savanna dotted with huisache and mesquite, and it doesn't have the density that these cats need. We're talking about, at least for sort of the first two meters off the ground, like impenetrable density. And that's just not the way the mesquite and huisache come in.

Hilary Swarts [00:54:06] And the other thing that's really been-probably the biggest game changer in that, because maybe in the past, you know, let's say just for, for a hypothetical's sake, pre sort of European colonization present, let's say you had a, a fire or something that created prairie land here and then you started to have the encroachment of the huisache and the mesquite. Well, you might over time have some of the other thorn scrub species come in, right? Like a birdy lands on the mesquite branch, and you know, goes pooh-pooh, and in that pooh-pooh is the seed of a different species, maybe a granjeno or an ebony or something like that. And not just birds, all kinds of animals act as seed dispersers. Coyotes are huge seed dispersers. And so then you might have a chance for thorn scrub to come in.

Hilary Swarts [00:55:08] But one of the big issues, because we have such a, sort of a drought cycle here in South Texas that is relentless and pretty predictable, the cattle, and I'm not sure about the sheep, the sheep farmers, I don't know a lot about that, but I know that people who were interested in, in raising cattle were looking for grasses that would be robust to the drought cycles down here. And so there were imported, and sort of developed, non-native grass species. And those are um, those are the real sort of inhibitors of thorn scrub really reaching fruition. Because once you have non-native grasses established, let's say you have mesquite and huisache kind of dotting, dotting the landscape. And then, in all amongst it, you have the non-native grasses, when that same bird comes and poops that little seed, that seed may even germinate in the soil, but it's not going to get any sun, and it's going to be sharing its nutrients and its water with these demanding non-native grasses. And so the chance that it's actually going to be able to survive, let alone flourish, there is, is pretty low.

Hilary Swarts [00:56:48] So that introduction of non-native grasses in order to feed the cattle has, has really shaped the way the landscape transforms over time. And one of the things when I'm trying to kind of give people a little rule of thumb on what's thorn scrub and what just a bunch of brush is, if you can see grasses when you look into the habitat, that's not dense enough. And ocelot is not going to want to spend time there. When you get true thorn scrub habitat, its density really precludes the establishment of those non-native grasses.

Hilary Swarts [00:57:33] So, um, I think because you have sort of that sea change of, of these non-native grasses with, you know, the native grasses are more like bunch grasses and, and don't kind of proliferate the same way. When it was just the native grasses, the thorn scrub species had a chance to establish. But with the non-native grasses that are, that are so prevalent and spread so easily, that's been really a hampering effect on thorn scrub sort of naturally establishing. I think when we think about habitat restoration, you know, well, why don't we just throw a bunch of thorn scrub seeds in the ground and walk away and wait 20 years? The problem is with those grasses, those seeds aren't really going to have a chance.

David Todd [00:58:36] So, well, this has been a good lesson, that grass is not always grass and brush is not always brush and there's lots of nuances.

David Todd [00:58:47] So something else which I, I didn't realize (I was down in the Valley back in November) is just the startling urban growth.

Hilary Swarts [00:59:00] Yeah.

David Todd [00:59:01] And I was curious what you can tell us about that and its impact on ocelots.

Hilary Swarts [00:59:08] Well, I mean, I think particularly because, as a species, they are on the very extreme end of human avoidance. Like bobcats seem to be much less concerned about being around people. We even had a call to get one out of the Cameron County Jail, which I wish I knew more about that story. But obviously that cat was comfortable enough to be in an urban area enough to find its way into a jail. But ocelots are really, really human-avoidant. So the more human development there is, the less, I think, the less enticing, I guess I would say, an area might be for ocelots.

Hilary Swarts [00:59:54] So, you know, let's say you had a random patch of thorn scrub and it's surrounded by agricultural fields or something like that, that doesn't have a ton of human activity on a day-to-day basis. You know, you're going to probably be able to find ocelots in there.

Hilary Swarts [01:00:10] But once you start building up more, the type of development where they're literally just more humans milling around, and more lights, and more noise, and all of the things that go with us, that's going to, you know, that's going to work against ocelots being comfortable being in an area. But I mean, ultimately, it still sort of feeds back into that habitat issue. Right? If this urban development is happening in areas that are already cleared for agriculture, or have already, or are a different type of habitat - prairie or something - that that doesn't affect the thorn scrub, then that's not going to affect the ocelots that much.

Hilary Swarts [01:00:59] But watching the urban areas of Brownsville, Harlingen and, you know, just expand outwardly at a, at a pretty fast clip, that's definitely concerning. And I think that's, that's a big reason that, that we as the Fish and Wildlife, and other conservation partners that we work with, are really doing our best to work with willing landowners who either want to sell or want to establish conservation easements to just increase the amount of protected lands so that, you know, there's some bastion of safety for these cats, even as some of this development sort of spirals outward.

David Todd [01:01:50] Right. Well, we should, we should definitely talk about the, you know, some of the strategies that you all have worked to develop to try to protect these, these cats.

David Todd [01:02:03] One of the things I did, though, wanted to just touch on, and ask for your thoughts about, is the impact of, of other animals on ocelots. I think you mentioned that there's some competition with bobcats and coyotes and rattlesnakes and alligators, and I guess that's always been the case. But I was curious if there's a role that's new for feral dogs or hogs.

Hilary Swarts [01:02:36] So I guess this could be, just to be a nit-picky nerd, the ocelots don't really have a competition with alligators or rattlesnakes. They just could get et by them. Right? So that's...

David Todd [01:02:49] Gotcha.

Hilary Swarts [01:02:50] Or I guess not et by a rattlesnake, but bit by a rattlesnake. Whereas with, with the bobcat and coyote, they're looking at real similar prey bases. So and also those species, you know, would, would kill an ocelot kitten if they were to come upon it.

Hilary Swarts [01:03:08] But to the feral dogs and the hogs - you know, I think that's an interesting question. I haven't thought about it much, which makes me think it's probably not such a huge issue. For the most part, feral dogs and thorn scrub are not really going to mix very well. Even kind of the most savvy feral dog is going to have a tough time in that habitat type, just like literally moving around but also finding food, being able to reproduce safely.

Hilary Swarts [01:03:47] I think, for the most part, you find your feral dogs in sort of the surrounding areas of development. And those are not areas that ocelots are too likely to go. I know every once in a while we'll get some dogs showing up here at the Refuge that are, I don't think they're feral, I think they're just, you know, from the local community. Some people have, have more open policies with their dogs' movement, and some people have more controlled policies with their dogs' movement. But when we see dogs out here, if we are able to, say, get them and get them back to their owners, great. But for the most part, you know, it's like we'll see them for a couple of days and then we don't see them again. And I don't know if they trotted their way back home, or if the the perils of the wild got the better of them.

Hilary Swarts [01:04:43] But once in the bluest of moons we'll get them on one of our cameras. But I can't, I mean, I can only think of a handful of times that's happened. So, my impression is the feral dogs aren't a huge issue. I'm sure up in the ranch lands, you know, there are ranch dogs, but again, those dogs are probably not venturing into that thick, thick brush. Um, you know, maybe they try to go in a few feet after a, you know, a rabbit or something, but for the most part, I think they're really not very compatible with it.

Hilary Swarts [01:05:21] But the hog, I don't know that the hogs have that much effect because when you see, I guess I'm trying to think of it on multiple levels. As far as food competition, not really. Right? Like a hog will eat just about anything. But hogs are not hunters. So, you know, yeah, I guess if a hog came across some dead animal, it might, it might eat it. But, but as far as competing with an ocelot for food, they're really not, um, they're not really any kind of big, big competition. And I mean, I would guess that, you know, an ocelot might eat a baby feral pig if it could get it. I mean, pigs can be pretty fierce in defending, you know, defending themselves when they're young. But you're also talking about an animal that can have 12 offspring in one shot, and they can do that multiple times a year. So I guess an ocelot might eat a piglet if it were able to. But dietary analysis that was done on fecal samples of both bobcats and ocelot here at Laguna did not show any pig.

Hilary Swarts [01:06:32] And then as far as, you know, hogs kind of digging up an area in search of tubers and whatever else, they're not doing that so much in the thorn scrub. Again, it's really, it's really, really dense habitat. And when I see sign of hogs, it's usually kind of a wallow thing or in a more open area.

Hilary Swarts [01:06:58] So I would guess that the encounter rate with feral dogs is probably like near zero. Um, and with the hogs, you know, they probably bump into each other once in a while, but I think they probably just coexist without, without too much issue.

David Todd [01:07:20] OK, well, well, thanks for laying it out.

Hilary Swarts [01:07:24] That's like a lot of me just theorizing, I can't say all of that is substantiated by solid scientific data.

David Todd [01:07:34] Well, you're modest, but I'll, I'll take that.

Hilary Swarts [01:07:40] Okay.

David Todd [01:07:41] So one of the things I think that's really striking about your life down there is that you seem to spend a lot of time in the field monitoring these ocelots and trying to learn more about their behavior and their movements and so on. And I was hoping that you could tell us how you do this because you've made it pretty clear they're, they're human-phobic. And so how do you manage to monitor and track and collar and otherwise track their behavior?

Hilary Swarts [01:08:18] Well, I am here to burst the bubble that many people have when they think of wildlife biologists. I do get to spend some time in the field, but I spend more time at a computer than probably most people would think. When they think wildlife biology, you know, they think, you know, the, the jaunty hat and trekking through the bush and all that. And it's not, it's not nearly as glamorous as all that. And actually, the United, excuse me, the U.S. Fish and Wildlife Service actually canceled its own ocelot monitoring program as of the summer of 2021. So I'm no longer involved in that.

Hilary Swarts [01:09:06] But I was for many, many years, so I'm happy to, to talk about kind of how that works. But I will say that a steady stream of incredibly competent, capable, brave and tireless interns are responsible for the majority of the day-to-day field work. So I, you know, on some level, I've done all of this stuff and certainly I was doing that field work in past jobs but I would be remiss to not give credit where credit is due. And we're really talking about a lot of, um, hot, sweaty, buggy grunt work that these sort of recent college graduates take on with such gusto that it's always an inspiration to me, and on some level sort of keeps me young or keeps me under the illusion of being young.

Hilary Swarts [01:10:08] Um, but basically how it works is, the ocelots at Laguna and on some of the private ranches where we had been doing monitoring as well, it's been going on for decades. So I think since early to mid '80s, there has been some kind of monitoring going on with these cats, and the fact that they're incredibly loyal to this one sort of brutal habitat type is actually also an upside, because you know where you'll find them, and you know where you're less likely to find them.

Hilary Swarts [01:10:49] So we use camera monitoring, which is, people call them, "trail cams" or "remote cameras" or "camera trapping" - lots of ways to refer to the same thing. It's basically a motion- and heat- sensitive camera that you put out in a place where you hopefully know that you have ocelots to be able to keep track of them.

Hilary Swarts [01:11:14] And ocelots not only have beautiful pelts, but also unique pelts. So you can use each individual's health pattern to establish their identity and be able to track them over time. And that's a huge advantage in keeping track of an especially small population.

Hilary Swarts [01:11:37] So we have cameras out all over the landscape. And at this point, you know, we basically know where they're going to be and we're able to consistently document them. We also have what we call, "guzzlers", which are basically human-made water sources. There are about 15 of them across the refuge. And again, because of the drought tendencies of this area, those were established, I believe, in the, I hope I get this right, I think in the '90s, late '90s, maybe, as a way to make sure that ocelots and, in fact, other wildlife would always have access to fresh water. So those, those guzzlers are great places to kind of have, keep a camera, keep two cameras there to try to get either side of the cats to be able to identify them by their pattern, that they're going to go to fairly regularly.

Hilary Swarts [01:12:46] And again, these guys have home ranges that are their regular sort of day-to-day places that they travel. So, you know, if I put a camera in in Place X and I know that there are three ocelots that live in that vicinity, I'm probably going to get all three of them on that camera.

Hilary Swarts [01:13:05] So I think it's a sort of iterative process where the better you understand where they're going to be, the better able you can get (is that a sentence?), the more strategically you can place your cameras to try to detect as many cats as possible. So that's one method that we use for monitoring. But of course, that relies on the cat coming to where the camera is.

Hilary Swarts [01:13:33] What if you have a cat that's not doing that or not operating in the area that you expect? So we also, from about October through May each year, were doing live trapping so that we could, we would take biological samples, genetics, et cetera, and blood for a disease panel analysis. Um, but primarily we were doing it to put collars on these cats. And in the past, those were VHF radio collars. And if you ever watched nature shows and you watched somebody standing with an antenna and rotating around - that's VHF tracking. So I think it's stands for "Very High Frequency." And basically, each collar has a unique radio frequency and you can cycle through and listen for where your cats are. So that can be really helpful in maybe finding one of your cats in a place that you didn't expect.

Hilary Swarts [01:14:35] But again, you still have to look for the cat in the right place in order to hear it. And the innovation and implementation of GPS collars, Global Positioning System collars, I guess like you have in your car or on your phone, that has been a really interesting sort of a game changer. Because in that case, you don't have to know where the ocelot is going to be able to track it. And so when they start dispersing or moving around the landscape in places you didn't expect, the GPS collar will tell you essentially the locations where the cat has been.

Hilary Swarts [01:15:22] So I think they started, I started here in fall of 2013 at Laguna Atascosa, and I believe they started working with collars in 2011, 2012. So when I came on

board, it was still relatively new, and has, has proven to be really helpful for, for many things. One is figuring out what does a disperser do once it gets out of its safety zone? And we, much to our surprise, we had one cat that was like in people's backyards in Rio Hondo, which we thought would never happen, right? That doesn't sound very human-phobic. And that's a huge exception to what we'd seen. But if not for the GPS collars, we would never even know that that happened.

Hilary Swarts [01:16:14] And the collars have also been helpful for us in a couple of different ways in terms of trying to promote recovery actions. One is seeing where ocelots go when they leave Laguna proper helps us understand what road areas are maybe a bigger concern for trying to get protections in place. So if we see, okay, this is any time we get an ocelot in this area and it tries to cross the road, it tries to cross it at this spot. So this is a spot that carries high risk but also carries high potential for mitigating that risk.

Hilary Swarts [01:16:56] And the other thing is seeing how they travel, you know, once they get into the more fragmented landscape so that we can be using that to think about future land acquisition. You know, if a landowner comes to us and they want to sell their property to Fish and Wildlife, we want to determine is that property, you know, despite people's imaginations about how much money the government has, not all agencies are the same that way. So, you know, we're talking about limited funding for any kind of land acquisition. We want to make sure that that's used strategically for a place that an ocelot will actually want to go, rather than just because it happens to be available.

Hilary Swarts [01:17:48] So the GPS collar is essentially telling you where a cat goes, when it's not where you think it is, has been huge for us kind of getting a better understanding of their interaction with the greater landscape.

David Todd [01:18:05] So this story you're telling me reminds me of that old dilemma about you always find your car keys underneath the lamp.

Hilary Swarts [01:18:14] Yes, exactly, exactly. Exactly it.

David Todd [01:18:18] And so I'm wondering, you know, you're, you're a federal employee, and I guess your duties are mostly on lands on the, or within the Refuge boundaries. But ocelots don't know who owns what piece of land, and I'm curious if you find that there's a possibility of an undercount or a miscount because, you know, we're not always looking in the right place and there are probably a lot of private lands that maybe don't get the same scrutiny as Laguna Atascosa. Is that an issue, or do you think not so major a deal?

Hilary Swarts [01:18:58] I mean, I, I think it's an issue, but I think maybe not so major a deal at the same time, because first of all, we do have some private landowners who, who welcome us onto their land to do monitoring. So that's really helpful for opening up some of those northern areas and getting a better understanding of sort of what we kind of refer to as like "the ranch population". And so there are certainly landowners who, who are really interested in ocelot conservation and want to foster it and have no issue with the federal government. Unfortunately, he passed away a couple of years ago, but Dr. Frank Ytrurria was a big, big supporter of ocelot conservation in South Texas, and he has a good portion of ranch land that he opened to our access, or that he allowed us to access. And his family continues to foster that interest in ocelot conservation.

Hilary Swarts [01:20:09] So, I think one thing that I've learned is to be wary of painting private landowners in Texas with a really broad brush. There are certainly those who, um, you know, have no interest in interacting with the federal government, who unfortunately have the misperception that if we find out there are ocelots on their land, we're going to start telling them what to do. The, to me, sort of the irony of that is if they have ocelots on their land, whatever they're doing now is, it's good. It's working. So we don't want to mess with that, you know?

Hilary Swarts [01:20:48] Um, but there are also some academic researchers who have accessed more of those private land based on very carefully worded permitting language that allows the researcher to report numbers to us without being forced to disclose specific location information.

Hilary Swarts [01:21:15] So I my understanding, and I don't know if I have the full story, is, prior to my time here, the former ocelot biologist worked with some of these academic researchers to figure out what level of anonymity for land owners would allow those researchers to be more comfortable sharing numbers and they were able to kind of revise the permitting language so that, so that we could have a better count?

Hilary Swarts [01:21:55] So I mean, I would, I would love to find that we were dramatically undercounting these cats. Um, but I think we're, we're probably not undercounting them too much. And a couple of things lead me to think that: one is, again, how much of this habitat is even available. So, you know, any of us have gone on Google Earth, right? And you can see what's going on there. So, you know, we know that, um, if we're looking, you know, on Google Earth at somewhere and there isn't any indication of thorn scrub habitat, we're not really likely to suspect that there might be ocelot presence there. So one, one way to be kind of checking our estimates with, with sort of reality is just appreciating where there actually is habitat.

Hilary Swarts [01:22:46] And the other, unfortunately, is road kills. So even if you have ocelots existing on, let's say, a private ranch, you know, up north a couple of counties. If they get hit on the road, the road is a public access area. And so, you know, we have since the early '80s been mapping any ocelot mortalities from the roads that have been reported and that kind of helps us understand the spread of these cats, even if we can't go on to the actual lands where they're spending their time before they sadly venture into the road.

Hilary Swarts [01:23:34] But I think one of the, one of the benefits of, of making that permitting language more amenable to reporting is, you know, for people who aren't as familiar with South Texas, you have certain ranches that are essentially an entire county. So if I say, "Oh yeah, we found an ocelot in County X", and everybody knows the County X is almost 100 percent owned by Family Y, then you know that risks their anonymity factor and can cause them some concern. So again, taking out the specificity of the location language from the permit allowed the researchers to be more comfortable reporting numbers without feeling they were betraying the trust they had built up with the landowners who had granted them access.

David Todd [01:24:32] Okay. I think I understand better about the ins and outs of trying to get a sense of the populations of the Refuge. That really helped.

Hilary Swarts [01:24:43] But I mean, I would, like I said, I would love if there were an undercount. You know, I mean...

David Todd [01:24:48] Sure.

Hilary Swarts [01:24:48] I,t's better to better to be surprised by more than surprised by fewer, I suppose.

David Todd [01:24:56] Yeah. Well, one last question about the monitoring, if you don't mind.

Hilary Swarts [01:25:02] Yes.

David Todd [01:25:02] I am intrigued by why Fish and Wildlife decided to suspend or maybe end monitoring. What was the thought?

Hilary Swarts [01:25:12] Well, from what I understand, it's going to be outsourced to some academic researchers, but that, I wasn't really part of that decision-making process, so I don't have much I can say about it.

David Todd [01:25:27] Okay. All right.

David Todd [01:25:30] So let's, let's talk a little bit about ocelot protection and restoration. I think that's some of the most exciting, you know, stories that I've heard about ocelots and ...

Hilary Swarts [01:25:43] Definitely.

David Todd [01:25:44] You know, you've touched on this, this tragic problem with, with ocelots crossing of, I guess it's Highway 100 and some of the other roads down and around Laguna Atascosa and some of the ranch lands.

Hilary Swarts [01:25:58] Yes.

David Todd [01:26:02] What can be done to try to mitigate those losses?

Hilary Swarts [01:26:07] So actually, this is probably, probably the most exciting, maybe, thing that, that has happened during my tenure and, and I like to joke, it's like walking in at the end of Thanksgiving dinner when the last dish is being dried and saying, "Oh, can I help?" Because the amount of work that went into, into working on road safety for ocelots predates me by decades. So it's a really standing on the shoulders of giants type scenario.

Hilary Swarts [01:26:47] Um, for, for probably about two decades, there was a lot of back and forth between Fish and Wildlife and TXDOT, Texas Department of Transportation, with Fish and Wildlife saying, "You need to start incorporating some kind of ocelot protections into your road projects", and TXDOT saying, "You know, sort of like, we can't justify the expense and various other, um, other barriers to, to enacting that approach."

Hilary Swarts [01:27:24] Um, but over time, and really, just before, in the couple of years before I arrived, TXDOT really had a huge change of heart, and I think they began to understand and embrace the idea of establishing some type of wildlife crossing structures, because you got to remember it's not just wildlife that suffer when you have collisions. The amount of property damage, injury and unfortunately, human fatalities that come with either colliding with an animal, or swerving to avoid an animal, are huge - I mean, really, um, a really huge public safety element. So I think there was sort of an "aha" moment of realizing, you

know, that, that implementing this, this plan for wildlife crossing structures is really a win / win for the wildlife and for the motorist. You know, and certainly TXDOT's biggest role, besides being able to move people from one place to another is to make sure they can do that safely.

Hilary Swarts [01:28:45] So when I came on, that, that sort of change had, had just occurred, and it was really in the phase of, "OK, Fish and Wildlife is on board, TXDOT is on board now, what is this going to look like?" And using some of that GPS collar data, using habitat configuration, the, the, sort of the planning, the planning took off. And you kind of have to think about multiple levels of, of, of sort of planning and design. One is sort of at the gross scale: where are we going to put in these crossings that are most likely to be used and to be attractive to these cats, right? You want to make sure that your, you know, they're not cheap to install, you want to make sure you're putting them in the right places, and that you're maintaining the habitat around them so that those continue to be the right places.

Hilary Swarts [01:29:56] And then sort of on the more high-resolution scale, what is one of these crossings going to look like? What, what is an ocelot going to want out of a crossing? So for people who are familiar with, you know, other places as wildlife crossings, you see a lot of these over-the-road crossings. And those are great for your, sort of prey species, right, deer, pronghorn, elk. They don't want to be in a small space and they want to be able to see widely, right? They don't want to walk into, into something where on the other end could be the jaws of the predator.

Hilary Swarts [01:30:39] So you see, like up in Banff and in the western U.S., you see these, these over-the-road crossings being installed. Some of them, beautiful. I mean, it looks like there's a forest going over the top of the highway. But for us, ocelots, and given the associated costs, cats like cover. Right? They don't want to be out and exposed. Anybody who has house cats knows that when you can't find your cat, the best place to look is the weirdest possible cupboard or something that they can tuck themselves into. And that's really a pretty general cat thing.

Hilary Swarts [01:31:21] So in the case of designing underpasses, that would be attractive to ocelots, that really made more sense to do underpasses, basically, little culverts that run underneath the roadway as opposed to above the roadway. So that, that design feature was specific to what that species' behavior patterns are like. And that's the key in all of this sort of wildlife safety, road ecology work is, what's your objective? Is there a particular species you're trying to target? What is that species like and how do we get that species to want to use these, these structures?

Hilary Swarts [01:32:05] So the installation of these underpasses, along with associated fencing. So you basically create a funnel system. So I'm a cat, I'm an ocelot. I get to a roadway and right in front of my face is a chain-link fence. And yes, I'm a cat. So if I really, really want to, I can climb up that. But the idea is to reduce the probability of a cat getting on the roadway. So instead, I'm going to walk along that fence line. Oh, and here's an opening and I go through the underpass, and when I look through the underpass, I can see on the other side is the habitat that I like. So it's attractive to go toward it, right? We don't want it to open up into an agricultural field or a Wal-Mart parking lot or something that they're obviously not going to want to go toward.

Hilary Swarts [01:32:56] And so they go through and they're there on the other side of the road. They have reduced their risk of getting hit by a vehicle to zero because they never got on

top of the roadway. So there have been, gosh, I know I'm going to get the number wrong, maybe 15 or more underpasses installed by TXDOT over the past several years. And they have plans moving forward to install, I think, six, seven, maybe eight more up along Highway 77 in the ranch country.

Hilary Swarts [01:33:34] And it's been phenomenal, it's been phenomenal to watch, watch these underpasses get installed and the fencing go up. And, eventually, basically, like for the, for the roadway that runs right by the Refuge, I think it was the week before we were sort of declaring the construction officially completed, the first ocelot used one of the underpasses. So from sort of a proof of concept idea, you know, we were over the Moon.

Hilary Swarts [01:34:13] But it's not just ocelots using these. We have seen, I mean, you name it, we have seen it in there. With the exception of the nilgai antelope, which I think based on size and their desire for vigilance, are probably less prone to go in these underpasses. And although maybe a couple of deer have gone through, again for the same reasons, I don't think they're as attractive to deer. But otherwise - bobcat, coyote, raccoon, o'possum, Texas tortoise, rattlesnake, indigo snake, bunnies, some birds, believe it or not (we have a picture of an owl going through), um, alligators, like, like pretty much every species you can imagine that's traveling along the ground has been making use of these underpasses.

Hilary Swarts [01:35:04] So it's another case, much like habitat restoration for ocelot, where the ocelot sort of serves as this flagship species, but many, many other species benefit from the recovery action.

Hilary Swarts [01:35:19] So that's been an incredible project and, and, and those underpasses have been camera-monitored since they were installed, which is how we know who is using them and when and how. And those are some, some really fun pictures. I think you can even go on like YouTube and look for some videos from TXDOT that they've put together of the sequences of still, still shots of various animals using these, including ocelots.

Hilary Swarts [01:35:50] So that's, that's been enormous because, you know, TXDOT took a huge risk. We didn't have any solid reason to believe that ocelots would make use of these, and it's an enormous investment. So the fact that they have, and continue to, you know, that feels like a real conservation victory.

Hilary Swarts [01:36:13] And then sort of expanding on that in a couple of directions, TXDOT has really embraced that idea statewide. And while we don't have ocelots statewide, you know, Texas is loaded with wildlife, that's one of the coolest things about this state. And they're really looking at implementing appropriate crossing structures statewide, moving forward. So anytime they're doing road projects, whether it's a new road or a road improvement project there's, there's a whole element of looking at wildlife safety and how to incorporate in those roads, incorporate it in those road designs. So that's a sea change, I think, with enormous positive ramifications.

Hilary Swarts [01:37:04] And then the recent bipartisan infrastructure bill that passed actually has specific funding allocated for wildlife crossing structures nationwide. So I think we're going to see them, you know, not just in South Texas and a few areas in the West. I think we're going to see them more and more on the landscape, as we humans, you know, claim more and more wild lands. If we're going to do that and still keep wildlife in the picture, we've got to figure out a way to do that with the best chance of co-existence.

Hilary Swarts [01:37:42] And so, and so these wildlife underpasses are, are pretty phenomenal development in South Texas, in the whole state of Texas, and now in the entire country.

David Todd [01:37:55] That is, that's really encouraging.

Hilary Swarts [01:37:59] Also, that's a really long answer. I apologize.

David Todd [01:38:02] No, no, this is this is so important. I mean, gosh, somebody like you who's been involved: there's no replacement for getting your view of it.

David Todd [01:38:12] One other things I wanted to ask you about roads and crossings: I understand that there's been a concern at TXDOT about cars traveling one way, you know, cutting over to travel in the opposite way and having a head-on collision. So TXDOT has been installing these concrete barriers to divide, you know, one stream of traffic from another. And, and I think there's been some concern that those concrete barriers can act as a trap for not just ocelots but other wildlife who are trying to cross the road if they don't have a culvert, and that, that maybe guardrails would be a better solution. Do you have any views about that?

Hilary Swarts [01:38:58] Well, I think there's a whole, I would bet you there are multiple volumes of sort of the safety standards and regulations that TXDOT is required to abide by, right, in any kind of construction project. So to some extent, I feel like it's not as much my place to comment.

Hilary Swarts [01:39:21] But I know on State Highway 100, the construction of those concrete barriers was something the Fish and Wildlife explicitly recommended against, along with actually some emergency services. Because if you have a concrete barrier, you can't have an ambulance, you know, do a U-turn if they need to or whatever.

Hilary Swarts [01:39:44] So that was something that was of great concern to us, and we saw a series of dispersing male ocelots killed on Highway 100 in a relatively short amount of time. And that really accelerated the process of getting wildlife underpasses and fencing installed along that stretch of highway that has the concrete barrier.

Hilary Swarts [01:40:13] For me, I would probably, if, you know, a queen for a day, I would probably go with guardrails. But you have some roads where that median is so narrow that if a guardrail proves ineffective, you're still possibly looking at injury or fatality. And the other thing that TXDOT reminds us is, if you have guardrails in your median and someone hits one, then you have to send maintenance out to repair those guardrails and those maintenance workers face risks, you know, from the ongoing traffic.

Hilary Swarts [01:40:56] So I think that, you know, in any, I think you find this across agencies, state and federal, right? We figure out how we're going to do something and then we keep doing it that way because we know how to do it. And it's kind of like that analogy of turning a battleship. You know, it takes time and it takes effort. I think that when they have really no other viable choice, they may go with concrete barriers.

Hilary Swarts [01:41:27] But I think this, the State Highway 100 situation was a real eye-opener about, about the potential negative ramifications of those barriers. Because a cat, you know, a cat can leap over a three-foot barrier, or four-foot barrier, no problem, in theory. But a cat is not going to leap over a barrier if it doesn't know what's on the other side. And it's

kind of terrified because these enormous, you know, vehicles are speeding by them and they're wedged up against the side of this barrier.

Hilary Swarts [01:42:01] So, um, so I think that for ocelots, and for other wildlife, the installation of the fencing and the underpasses on 100 has made a huge difference in the amount of wildlife mortality that they're seeing on those roads. So I guess I would say my hope for the future would be, whenever possible, to use something that has greater visibility than a concrete barrier. But I'm, you know, I'm not a road engineer, so I can only say what I think I would want to see, but I don't have all of the training that they have.

David Todd [01:42:47] OK. Well, I guess it's live-and-learn, and there's an evolution here towards a better solution.

David Todd [01:42:55] So something else that I've been really struck by, by reading about your work down there is this effort to try to restore some of this thorn scrub habitat that's been lost over the years by bringing back some of the native species that were once found in South Texas. Can you tell us about that effort?

Hilary Swarts [01:43:22] Absolutely, I think it's, I think it's probably the most important thing that we're working on. The wildlife underpasses are really important in terms of reducing sort of individual mortality. But as far as overall benefit to the populations of ocelot, increasing habitat, increasing connectivity between existing habitat, I think that's really the future of, of the current and the future of recovery.

Hilary Swarts [01:43:52] So, so it's tough, though, because thorn scrub is adapted to grow extremely slowly. Once it's established, it's incredibly robust, but that establishment can take 20 or 30 years. So for our instant-gratification society, it can be a real tough sell. And it's expensive.

Hilary Swarts [01:44:21] So first, you have to collect the seeds from the areas where you want to plant them because you want to get seeds that are best adapted to those sort of more micro-level geographical variations, right? So you're going to go collect your seed from, you know, proximate to where you want to do your planting.

Hilary Swarts [01:44:46] And then each of those seeds gets planted. We call them, "plant bands." it's sort of a rectangular, can you say, "rectangular tube"? Does that make sense? That's about (what are those?) probably about an inch and a half by an inch and a half square. And you put the soil in there, and then you put the seed in. And assuming the seed germinates, and different species have some really different germination requirements, like there are certain seeds that have to pass through an animal's digestive system to germinate, they need that acid basically from the animal's stomach. So we try to simulate that in whichever, you know, each species may have a different need. So maybe they need to get really cold before they're going to germinate. Or maybe they need to be scored a little bit to break the outer hull. Or maybe they need that acid treatment, or maybe they don't need anything, you know, but each species is, needs to be treated as a unique species that may need kind of a different start from other species.

Hilary Swarts [01:46:03] So once you get your seeds germinating in there, those seedlings need to grow for like a full year before you can even consider putting them in the ground. And I think that that, in and of itself, is really telling of the whole process. You know, you think about if you want to grow tomatoes, you can buy tomato start, right, or you can put seeds in

and within, you know, 60 days, you have a nice robust little seedling that you can put in the ground.

Hilary Swarts [01:46:37] These guys do not work like that. They are on the slow train. So you have a full year that you're caring for and maintaining these seedlings, with watering, with appropriate saving, if necessary, with sometimes fertilizer treatments. And once you have your seedling ready to go, then you need to get it in the ground and in order to try to forestall that non-native grass encroachment that, that we talked about earlier, you want to plant these seedlings at really high densities like a thousand per acre, so that when they do start to grow, you're quicker to get the shading that you need that keeps those non-native grasses from getting comfortable in there.

Hilary Swarts [01:47:33] So you're talking about a slow process, an expensive process, planting at these high densities. And then there's been some different research done by different groups, academic groups in the area, on ways to try to both increase the survivorship of a given group of seedlings, and accelerate the speed it takes to we call it like basically getting to mature canopy. And for us, mature canopy is sort of shorthand for, "Is this dense enough that a female ocelot would feel comfortable breeding here?" And like I said, that could be 20 or 30 years in the days before non-native grasses were a problem. It still is a very long process.

Hilary Swarts [01:48:25] So we work on trying to clear the field as much. Sometimes there are herbicide treatments to keep that non-native grass from establishing. We've also tried using what we call tree tubes, which are basically like plastic sheets that are of variable heights. But I think the ones we use, oh, I want to stay they're, I'm trying to picture myself standing next to one, I bet they're three and a half feet, maybe four feet, no, three and a half feet tall, probably. And it's basically a semi-opaque, thin plastic sheath that's incredibly, made of an incredibly robust sort of plastic material. Because if you've ever spent time in South Texas, the elements are cruel to plastic. Like, I left a bucket in my backyard one time at the beginning of summer, and I went to pick it up a couple of months later, and it just completely crumbled in my hand.

Hilary Swarts [01:49:29] So these are specifically designed to be robust against the elements, be it UV rays or, you know, salty air, or anything like that. And they have little sort of ventilation slits cut in the side of them, but they have proven to be, I think, sort of revolutionary in this restoration process. The problem is it's expensive, it's expensive to buy them, it's expensive to install them and it's expensive to remove them. We've found through work with researchers that it's best to keep the tubes on for about a year because you want to offer to offer that protection, but you also want the, the plant to invest in, in its root structure as well. And if it's investing everything in growing tall, then you don't get as good a root structure and you get these sort of odd cylindrical plants. So you don't want to keep them on too, too long.

Hilary Swarts [01:50:33] But they have multiple positive effects. First of all, they guard against the grazers, right? Your little bunnies when you have tiny seedlings and your deer and your nilgai and anything else, as they grow taller. So a lot of, a lot of seedlings can have some resistance to browsing. But this really gives them an edge that they can get some, some real substance grown before they're encountering, you know, an herbivore who might want to have a little snack of leaves.

Hilary Swarts [01:51:08] They also seem to help by, you kind of set them in the ground, maybe an inch or two. And that seems to help keep the non-native grasses from getting quite as close to the seedling. So it gives the seedling a little bit more chance to be drawing up water, a little bit more chance to be getting nutrients from the soil. And because of the sort of semi-opaque nature, they're still getting sunlight. They're just not having to compete with the non-native grasses for other elements.

Hilary Swarts [01:51:51] And the other thing they seem to do that I think can be incredibly valuable at certain times of the year, and maybe irrelevant other times, is they can create a little bit of a moist microclimate in there, so that when we're going through our brutally hot, blazing-sun south Texas summers, that those little seedlings are in there with a little bit of extra moisture, than they would have if they were just totally exposed. And I think that really also helps with survivorship.

Hilary Swarts [01:52:29] And so kind of using those combined methodologies, essentially reducing threat from browsers, keeping non-native grasses at bay and trying to keep them, you know, a little bit, a little bit better prepared for those hot stretches, these tree tubes seem to be a pretty, a pretty huge benefit to the process.

Hilary Swarts [01:53:00] And some of the research that was done, by necessity, had to extrapolate using modeling because they didn't want to wait 15 years to see what would happen. But employing a combination of methods between sort of mechanical clearing of, of, of non-native grasses, herbicide use to prevent encroachment by non-native grasses, and employing these tree tubes, you might be able to get to mature canopy in a third or half the time that would take normally in in the days before non-native grasses.

Hilary Swarts [01:53:41] So, I guess my thinking on it is, it is such a labor-intensive, expensive process that I would rather see that investment go in early in the process for a long-term better outcome that will require less management down the road. But different people have different opinions on, on that.

Hilary Swarts [01:54:09] But for me, you know, not employing as many methods as you can to foster both the survivorship and the accelerated times to the mature canopy, it's like, you know, running 25 miles of a marathon and then stopping. And it's like for me to do that extra a little bit and the payoff is enormous. And we have one field that was planted in January 2021 - kind of a small field, there were some extra seedlings left over from another project, so they decided to do this little field. And, and they did put tubes on all of it. And we also had an incredibly wet year in Texas last year. So that's something that you can't always count on. But we've got some of these seedlings that are three foot, four foot above the tube height, which is like unheard of without, without that kind of protection.

Hilary Swarts [01:55:11] So, so it's really promising, but it's also a serious exercise in patience, which is not my strong suit, which is not most people's strong suit. I try to remind people, you know, Mother Nature took eons to get this all figured out and humans took a nanosecond to wreak havoc on it. And we're going to have to remember that it's going to take time and investment to do this restoration work.

David Todd [01:55:46] Yes, it must be really humbling. What do we have? 10000 years of practice with corn and wheat and all these domestic species? And you know, you're trying to figure out how to do ebony in just a few years. It must be just mind-blowingly difficult.

Hilary Swarts [01:56:07] Well, and it's also kind of funny because nobody, I mean, we're in, you know, serious agricultural land. So what we're trying to grow is what most people are trying to clear. And so even like I was talking to a crop-dusting company the other day about one of our fields and possibly treating it before doing a planting. And it was like I had to keep reminding them: we're trying to do the opposite of what you're used to doing. So you're trying usually to get rid of this stuff that we're trying to encourage. And we're trying to get rid of the stuff that you're usually trying to encourage. So it kind of sometimes it takes people, especially people who are in ranching or in agriculture, it can take them a little while to kind of wrap their head around that we're deliberately creating this habitat that, you know, they and others have spent many years trying to, to fight back.

David Todd [01:57:11] Hmm. Gosh. Yes, that is perverse and it must be difficult to change your whole mindset.

David Todd [01:57:20] So while we're talking about ways to try to bring these cats back, I guess it's, it's also important, from what you've told me, to try to address this, the inbreeding and the genetic gaps because of these fragmented habitats. I understand that there have been some efforts to relocate animals, and I was curious if you could talk about that, as well as some of the efforts to retrieve sperm from dead animals. It's just, it's mind-boggling to me. So maybe you can talk a little bit about these efforts to work on the genetics of ocelots.

Hilary Swarts [01:58:09] Sure, sure, so. So it's been on the table for quite a while to try to work with Mexico, to translocate a couple of females from their population of sort of genetically similar, but much more genetically diverse, ocelots in Tamaulipas up here to South Texas. And as you might imagine, that's, that is a complicated and, and very, oh, I guess challenging process for a number of reasons.

Hilary Swarts [01:58:51] I mean, we're talking about, you know, first of all, crossing an international border which is, in and of itself, sort of adds a lot of layers. Right? There is permitting issues. There CITES, all kinds of stuff like that. Of course, there's the need for much diplomacy between both the state and federal environmental, actually environmental agencies on both sides of the border. And you know, it's us asking Mexico for a huge favor that they're not under any obligation to grant. So sometimes I see, you know, this sort of referred to as like, you know, in sort of this assumptive way, presumptive, assumptive?, that, oh, well, when we get those ocelots from Mexico and I'm like, "Whoa, whoa, whoa, that's up to Mexico." You know, we can, we can work with them. We can try to demonstrate that we will have these cats' best interests in mind. But this is not our decision.

Hilary Swarts [01:59:57] This is the decision, you know, of those agencies in Mexico. And much like you see in the United States, these federal and state agencies - there's a lot of turnover. And when sort of administrative leadership changes that can have ripple effects throughout multiple agencies, at the federal and at the state level. So there is a lot, a lot to unpack in what it sort of takes to do that.

Hilary Swarts [02:00:24] And we've been, over the years, and this isn't really my arena - my colleague, Mitch Sternberg, has been sort of leading this effort - but, you know, working with contacts in Mexico, doing preliminary surveys of populations of ocelots in Mexico to make sure that they're robust enough that they could sustain the loss of a female or a two to Texas. Right? You don't want to, what is it? Steal from Peter to pay Paul, kind of thing. We don't want to put other ocelot populations at risk. That's not, that's pretty self-defeating. So, you know,

there's a lot that goes into that. Um, and, and, and that was sort of being discussed for years before I got here.

Hilary Swarts [02:01:15] And then when it looked like TXDOT was really coming around and embracing the idea of underpasses, I felt like it wasn't, it wasn't good practice to ask Mexico to, you know, essentially give us one of their precious natural resources, if we didn't have everything in place that we possibly could to improve their safety and their chance of success. So we sort of put that, we kept up communications, and Mitch has been diligent about maintaining really good relationships. But we put it a little bit on hold so that these wildlife underpass structures could be implemented and constructed and sort of field-tested so that for, for I guess it's the same reason, but if you kind of look at it two different ways.

Hilary Swarts [02:02:20] One, so that if Mexico, you know, found it in their heart to grant that request, that, that those cats would have a better chance of survivorship than they would without those crossings in place. And sort of from a, I guess, an optics perspective, to demonstrate to Mexico that we're serious about ocelot conservation and implementing recovery actions that will benefit these cats, so that they understand that this is not something that we would assume or take for granted and that we would be doing everything in our power to, you know, honor that gift by giving that cat the best chance of survivorship.

Hilary Swarts [02:03:08] So now that those underpasses have been implemented and installed in the areas, you know, around Laguna and somewhat around the ranch lands, we're sort of diving back into that again. And I'm not as involved in that as I have been in the past, but we certainly have the go-ahead from our regional leadership to be working on that, on that process.

Hilary Swarts [02:03:40] Additionally, these cats in Texas would even benefit from a translocation between the two populations that aren't connected. So that may be the slightly lower-hanging fruit that we would try to do first because it obviously it takes a lot of the complexities out that that are involved in, in sort of that international effort.

Hilary Swarts [02:04:08] And it would give us a chance to also try to understand, okay, what happens when you plunk an ocelot down in a place it's never been before? Right? Like, what does that look like? How do they do? What do they do? How do they move, you know? Do other cats go right after them, or, you know, trying to figure out where is the safest place that you could put a cat down that it wouldn't be right in the middle of somebody else's, you know, home range?

Hilary Swarts [02:04:37] And, and, and I think people talk, sometimes a bit glibly, about the idea of translocation. And I always say, "Okay, imagine you open your eyes tomorrow morning and you're in a yurt in Mongolia, and it's not even your yurt, and you're hungry. Like, does that seem easy? To me, that seems really hard.

Hilary Swarts [02:04:59] So I think being appreciative of the challenge of translocation and what that means for that individual animal and trying to give that individual animal the best chance of success. So anything we would do along those lines, we would do using what we call a "soft release." So you're not just kind of like dropping the cat off and "see ya later mashed potato." You're, you're setting them up for like a month or so in an enclosure in the area where they would ultimately be released so they can start to get used to the environment, the smells. Other cats can get used to their smells, you know, that kind of thing. And then when you open the door to that enclosure, you continue to provide supplementary food for as long

as they continue to need it or eat it, you know, and they have that space to retreat to if they need to. So I think that's sort of what we envision it looking like, um, when it goes ahead.

Hilary Swarts [02:06:03] And like I said, those efforts have sort of been, have been reignited now that these wildlife underpasses are installed. So that's sort of one attempt to address inbreeding because actually, and I know I still find this surprising, even though I learned it now, gosh, embarrassingly probably 20 years ago, is that it really takes very little gene flow - like one individual per generation - to dramatically improve genetic diversity. So it's, it's a huge undertaking, no doubt, but you're not talking about needing to bring 35 cats in, or something like that.

Hilary Swarts [02:06:48] You're talking about if you can introduce one female into the population who, you know, has, has a greater range of genetic diversity and she mates, you know, with probably a couple of males over her time, because the males, like I said, the male / male competition is pretty intense. So the likelihood that, that maybe a couple of males will be sort of "big man on campus" during her lifetime is, is not unreasonable. And then, you know, those offspring have offspring. And, you know, in, in a relatively short amount of time, you've really improved the genetic structure of that whole population - a short amount of time being several years.

Hilary Swarts [02:07:36] But, but still, so that's sort of one approach to, to improving the genetic diversity of these small, isolated populations. Another area that's been investigated has been, okay, what if we don't move the cat, but we move the cat's reproductive material? So having had to do some media, other media pieces for a sort of family-friendly outlet, I used the term, "genetic material." But what I'm really talking about is semen. It's a lot easier to extract semen from a male than it is to extract eggs from a female. Right? That's essentially a surgical process, whereas the male process is much less invasive, let's say.

Hilary Swarts [02:08:31] So, so Dr. Bill Swanson at the Cincinnati Zoo is sort of a pioneer and innovator of cat reproduction, assisted-reproduction techniques. And so he came down and taught me how to use essentially, so we're right, we're trapping cats anyway. So if we have a male on the table and he's anesthetized how to use a catheter to extract semen from him and then to, right there on the spot, using liquid nitrogen, freeze that semen in little pellets so that you have the best chance of maintaining whatever viability that semen had when it was released from the cat. So once that semen is, is frozen and we're talking about deep freeze, deep freeze, then you have the potential for moving genetic diversity around based on that donor and doing essentially artificial insemination of females. So that's another, and that's really in its sort of nascent stages of development.

Hilary Swarts [02:09:56] We, Dr. Swanson has done within zoo populations a lot of assisted reproduction for various species of wild cats, so he's an incredibly, just great partner to be, to be thinking about this with. And he has the expertise, and the, and the tools, and the experience to be sort of driving how that process might work.

Hilary Swarts [02:10:30] And then actually like my big claim to fame, which is a weird claim to fame, is I am the first person ever to extract semen and ultra-rapid freeze it from a wild cat and get actually a viable sample out of it. So that's not like something you necessarily put on a business card, but I'm pretty happy about it.

Hilary Swarts [02:10:58] My, my understanding is that they have done catheter semen extraction from jaguars, but not the freezing part. Um, but this is the first of all of it with

ocelots. So I, I, I have never been so excited to see a little teeny vial of what looks like essentially toothpaste, a little squeeze of toothpaste. Um, when, when I did the procedure in the field. So that's with a live, anesthetized male.

Hilary Swarts [02:11:33] But, Dr. Swanson had, I think, the great idea, which would not have occurred to me, that considering that the unfortunate reality is we do get these road-killed male dispersers from time to time. If we can get to them fast enough and perform what's called an, am I going to get this right?, "orchiectomy", which is the removal of the testicle and get those basically on ice and overnight shipped to the Cincinnati Zoo, then they can extract that semen and stored that, cryo-storage, for the long term, to have, again, more genetic diversity available for when the rest of these procedures kind of get more worked out and become more reliable.

Hilary Swarts [02:12:35] So that actually happened in May of 2021. We had one of our lovely males, ocelot OM-283, beautiful boy, unfortunately, hit by a car near the refuge, not on one of the roads that had a wildlife crossing. And I got the call at, I don't know, maybe 2:45 in the morning, and by 4:30 I had the cat on ice. And in the morning I took it to the Gladys Porter Zoo down in Brownsville, where Dr. Tom de Maar, who's a senior veterinarian there, was able to perform the orchiectomy. We bagged each testicle separately and I drove to the UPS Store and we overnighted it to the Cincinnati Zoo.

Hilary Swarts [02:13:31] And to our absolute astonishment and excitement, it proved to be a viable sample. And they were able to freeze it, and they saw good motility, before they froze it, they were able to see good motility, good morphology. Basically, I've learned a little bit in what you want to see in sperm is that they can see they're shaped correctly, they can swim, they can swim straight and they can swim fast.

Hilary Swarts [02:14:00] So basically, after 36 hours, or 36 hours after the male was killed, that semen was still viable. So that was like a really kind of an unknown and a really promising development.

Hilary Swarts [02:14:20] We later, I think, in July, end of July, went to the Albuquerque BioPark - Bill Swanson, Dr. Ashley Reeves, who's a veterinarian, also getting her Ph.D. in sort of this reproductive biology arena, and me. And, they had been priming one of their captive ocelot females named Lucy. They had been priming Lucy in the same way like, you know, if you're a human and you're trying to get pregnant, you do injections to stimulate the follicles to produce eggs. Right? Or to, to drop eggs, basically.

Hilary Swarts [02:15:09] So Lucy had been in preparation, and I was just mostly watching. I left the veterinarians to do the, the surgical aspect, but basically they went in and looked at her ovaries and she had, gosh, I want to say, she had eight follicles on each ovary, which is an incredibly positive response to the, to the hormones. And they took OM-283 semen and deposited in her oviduct directly. So when you do that, right, you're not asking as much of the sperm. It doesn't have to swim up a canal. It doesn't have to find anything. You're putting it basically right where it needs to go, in an attempt to do artificial insemination with her.

Hilary Swarts [02:16:07] And it looked really promising. Unfortunately, she didn't end up getting pregnant. But you know, that's, that's how these processes work, right? There's still a lot more sperm left from him and from a, from some of the trapped ocelots, male ocelots, and they'll keep trying it until they figure out how to get it right. And that may be another avenue to introduce greater genetic diversity into wild populations.

David Todd [02:16:40] That's extraordinary.

Hilary Swarts [02:16:41] And I learned a ton on all of that. That was a world I knew virtually nothing about. So for me personally, just as a, as a curious person, and as a scientist, to be part of that was, you know, just an incredible career and learning opportunity.

David Todd [02:17:02] Well, this is, is so good to learn about and exciting that you are learning as well, and we're getting sort of a ringside view of the latest developments there.

David Todd [02:17:16] Well, I know you've been simple patient with these questions and I I'm thinking maybe we can talk a little bit about just a few more topics and then let you go back to your normal life, if you don't mind.

Hilary Swarts [02:17:30] Well, my normal life is not terribly exciting, and I have as much time as you would like, but I also don't want to, you know, hog the mic too much. So I will let you guide. But please don't worry about the time on my end. I'm in a good place.

David Todd [02:17:48] Well, so here's a question that, that, I think again, goes back to how do you preserve and restore these ocelots, and maybe reflects some of the earlier work you were telling me about with habitat restoration, and that is that the Fish and Wildlife Service, from what I've understood, has invested millions of dollars in securing some tracts down along the Rio Grande, you know, for a variety of wildlife, but as you said, the ocelot is often the flagship. And I think I I've read recently that there's some reluctant criticism of that because there is a feeling that that these riparian corridors are sort of a dead end, that there's not a way to get from the corridor to, you know, a remote population and to have that kind of genetic flow that you've been telling us about. And I was wondering if you've got any thoughts about that. I mean, do you think those corridors were a good investment or was that sort of a dead end that may have been somewhat futile?

Hilary Swarts [02:19:13] Well, you know, I guess, I guess I always point back to the difference in kind of human time scale versus ecological time scale. I don't think, looking back, from whatever point we're ever gonna regret any of the land that we, or anybody else, has put into a protected status, you know, that's going to be an increasingly rare thing. And so on some level, like my feeling is if you can, if you can acquire land, be it us, be it another agency, be it a private landowner who put some sort of legal boundary on their land like a conservation easement that protects it, I'll never, I'll never criticize that - ocelots, totally independent of ocelots, right? Just in terms of the way we're shaping up to, I guess, try to extract every possible thing from this planet that we live on. You know, I think we're going to come around to realize how much value there is in these protected lands.

Hilary Swarts [02:20:25] And I think the corridor question is, is like, like all of these things, right, is not a simple one-off type answer. I think that the acquisition of land along the border, you know, right now, there's not a huge, immediate benefit to us. They're not really in those areas. But, if you're trying to think long-term, if you wait to protect an area until somebody has already developed it, you've kind of lost your chance. So I don't view any of that as wasted effort. And as I said, from the beginning, I'm an "all creatures great and small" kind of person. So protected habitat, protected lands, whether or not it's in direct service of ocelot recovery, I will always be a supporter of that. That's always going to be something that I think is important.

Hilary Swarts [02:21:26] With the corridor stuff, I think, you, you're never going to lose. Right? So maybe right now that that, you know, sort of patchwork of lands along the Rio Grande is not necessary serving as a corridor. But if we continue to be able to expand ocelot land that's protected, you know, we may, we may be pleasantly surprised in 50 years to find that that was brilliant. You know, I think it's, I think it's, again, being really mindful of time scales, right? Your average human is living, American human, is living to, what, 78, 80, something like that. So we think in those blocks of time. But. I think to, to be a whole-hearted conservationist, some part of you has to wrap your head around the fact that you're going to be long gone before some of these benefits get realized.

Hilary Swarts [02:22:38] So the corridor along the river? Yeah, I can see criticism of it. For me? No problem. Is it the most important thing for ocelots right now? No, I wouldn't say that that's the case. But is there a potential for it to become very important? I think so, and I think that's something to celebrate.

Hilary Swarts [02:22:59] Not conversely, I guess, in addition, we've also been working on increasing the coastal corridor for these cats, where they actually are, where we actually know they are and we have them. And I think they're, early in my time here, it seemed like, you know, like when you first start a job and you kind of don't know anything and then a couple of years in, you think back and you're like, "Wow, I really didn't know anything." And then a couple of years after that, you think back to when you thought you knew something and you realize you still didn't know anything. So basically I'm learning all the time and things that I thought I understood, you know, there's always potential for that to be turned on its head.

Hilary Swarts [02:23:39] But relatively early in my time here, um, I think there was a sort of key change of philosophy in thinking about the way to be realistic about how we might be able to grow the ocelot population. I think there had been an emphasis on acquiring and restoring lands in places that we were essentially finding ocelot mortalities, which, as you know, those road mortalities I referred to earlier. And, you know, does it make a ton of sense to invest in restoring, acquiring, maybe, and restoring a parcel of land that's five miles away from where you actually have cats. And I think we kind of realized, no, we need to be more strategic in the way we're doing these acquisitions and really be doing them, I always think of it like an amoeba, kind of splitting apart and growing out from the center, is let's take the areas we know we have ocelots, you know, sort of these core occupied areas, and be looking to expand directly outward from them, not three miles away from them.

Hilary Swarts [02:25:05] An ocelot can travel three miles, no problem. Is an ocelot going to travel three miles through, I don't know, a town, and maybe by a power plant or something? Probably not. So I think the key is, much like I said, you know, when a, when a female ocelot gives birth to a female, that offspring sort of, you know, establishes her home range kind of near mom and then just sort of builds out slowly from there.

Hilary Swarts [02:25:38] So I think that's really the approach we've been taking in recent years is, let's look at lands that are literally adjacent to where we know there are ocelots and really focus our energy on that, and not so much on these more distant areas. And that's been going on now for a few years, and we've been fortunate enough to acquire a couple of really great parcels from a strategy perspective. One of them is, oh gosh, I want to say it's nearly, I think it's maybe 3000 acres. Oh, I might not have that quite right, but it's like literally right next to where we already have ocelots. And it's farm fields, but we are working on restoration. In fact, right now, um, Estuvio Rodriguez, one of our stellar maintenance workers, is out there

mowing the field to get that planted later in the month. So that is a huge bonus to be able to, it will take some time, it will take years to get that, you know, into a state of mature canopy. But that's a real, tangible benefit to the cats that are already here. Right? That's right next to them. It's not, they don't have to travel to find it. And so that's kind of what we've been working on.

Hilary Swarts [02:27:04] And just it just popped into my head with the corridor along the river, in fact, in '96, there was a female ocelot with one offspring detected at Santa Ana refuge, which is literally right on the river. And so I think there was maybe more optimism that there were more cats in that area than it turned out there actually were. But again, you'll never find me complaining about an area being conserved. Because you never know.

Hilary Swarts [02:27:42] I mean, I think about like, you think about the COVID vaccine. You know, in the '80s, people were experimenting, experimenting with mRNA and figuring out what they could do with it. And you know, it wasn't until 40 years later that it became super important and crucial for the, you know, sort of record-breaking speed development of the COVID vaccine.

Hilary Swarts [02:28:09] And I guess I think of protected lands the same way. You never know when that's going to become a crucial piece of land. And the fact that it's already protected, you know, can be, could be a make it or break it for some species or some population, or some, or some sort of ecological element.

Hilary Swarts [02:28:31] So I guess that was a really long-winded answer to, yeah, the corridor is probably not doing the most for ocelots right now, but I wouldn't count any chickens before they hatch.

David Todd [02:28:45] Well, that, I think it's a wonderful insight you shared, about just the prospects are always unclear. The potential is always sort of fuzzy, and but these are maybe long-term investments and at some point they may well pay back.

Hilary Swarts [02:29:04] I think that long-term investment view is key. I think that's a really, in fact, I'm glad you said it that way, because it reminds me to make sure that I bring that front and center to any of these kind of discussions, especially when people are skeptical about, you know, their taxpayer dollars being spent. And I get that. I don't, I don't begrudge that at all. But thinking about it as an investment, not just kind of a, you know, sort of a boondoggle, you know?

Hilary Swarts [02:29:38] Well, you know, as we, I guess try to think of this conversation, and I, I look back to where you were making some comments about ocelots and their beautiful fur and how people saw that as a beautiful way to make a coat. And that maybe a lot of your, your job is not only, I mean it's a lot of it is, you know, doing the field work, and the computer work, with the animals and with the habitat, but it seems like you're also doing a lot of work just explaining, just as you've been doing for us, so we can sort of change our minds and understanding about the ocelot. And so I was curious if you could talk a little bit about your, your role, not just as a biologist in the lab and field, but one who is an educator, whether it's for the public or for your interns who have helped you there at the Refuge.

Hilary Swarts [02:30:49] Yes, so that's actually, I think, a part of the job that I didn't have a great concept of when I accepted. The fieldwork stuff, I understood, the data management, the, you know, the bureaucracy stuff, like that stuff I had, you know, I had in some way had

more experience with. But I have actually really, really come to love the, um, you know, sort of the outreach element or the education element of this job.

Hilary Swarts [02:31:23] And granted, right, I got a pretty easy deal. Like the person who's trying to get you super excited about a burrowing beetle has a much steeper a hill to climb than I do, right? Like an ocelot, it doesn't take much for people to be pretty excited about these, you know, these kind of fantastic-looking creatures.

Hilary Swarts [02:31:45] But, it's also tough because most of them will never see one. I mean, I live on the Refuge where I work and we have an ocelot population here. I know because I've seen the pictures and I've caught them in the traps. But I think in my eight and a half years here, if that's the right math, um, I think I've seen maybe three. And one of those, I doubt. And one of them was totally cheating because I had a road-killed bobcat carcass under my bedroom window. So it brought out one of our ocelots - OM-275. But otherwise people don't see them. Right? They're nocturnal. They're in this dense stuff. And they don't like people. So that's kind of the heavy lift in terms of the education.

Hilary Swarts [02:32:39] And much as I was surprised when that person came across my desk years ago, I didn't even know there were ocelots in the United States. Like it's a little bit embarrassing to admit now, but having seen that I'm not alone in that. And there are plenty of people who live here in the Rio Grande Valley who don't even know that they are unique in having this, you know, sort of amazing jewel right in their backyard. And they're not really anywhere else in the U.S. I mean, Arizona has a handful of dispersal males who come over from the Sonora population, but they're not, you know, there's no established population. So it's a unique situation. But it's also one that a lot of people aren't aware of.

Hilary Swarts [02:33:25] So, um, so I think, you know, what, I've got going for me in that department is number one, like, I'm the kind of person who can talk to a rock. Like I don't have, I can talk to anybody. I'm not shy about it. And I, and if I like my subject matter, as you are well aware on the other end of this phone, I can never shut up, if I'm allowed. So, you know, just from a personality perspective, I happen to have going for me, you know, kind of an extroverted approach, and I think that's helpful.

Hilary Swarts [02:34:00] I also have the benefit that it's like a very compelling and beautiful animal. And I think people kind of give it sort of more clout because it sort of has this exotic tropical feel to it.

Hilary Swarts [02:34:18] And then more than anything, it's not controversial. You know, I'm not trying to sell ranchers on wolves. I'm trying to sell people on this beautiful cat that really in no way is going to harm them, or harm their their means of living or anything like that.

Hilary Swarts [02:34:37] So as far as, like the hand I was dealt, it's a pretty good one.

Hilary Swarts [02:34:43] And the way to kind of get around the fact that I'm trying to explain something to someone that I feel pretty confident they'll never see, as corny as it is, it's pictures. Lots and lots of pictures! And these guys, you know, with the remote cameras out there, and then with the work-ups that we do, we're lucky to have tons of photographs and those are really compelling. People really like to see them. They're drawn to them. They get excited by them.

Hilary Swarts [02:35:19] And we've also had, we have an annual Ocelot Conservation Day, which was actually just this past Sunday. We had it at the Gladys Porter Zoo. And in the past, we've been able to have, um, sort of a live ambassador ocelot that came from the Cincinnati Zoo and was trained essentially to be, you know, an educational animal, I guess you would say. And so she would come down. Her name was Sihil, and she would come down with her trainers and keepers. And we would, you know, basically I would hold people captive and make them listen to ocelot stuff for a little while because they knew that if they waited that the live cat was going to come out.

Hilary Swarts [02:36:06] And man, one of my favorite, favorite things about those presentations was, you know, I would wrap up and I would say, "Okay, now we're going to meet Sihil, kind of thing." And the trainers would come out with the cat in the little carrier and they would open the carrier up. And we're talking to an audience of like, Oh gosh, I don't know, a lot of people come to think of it, sometimes, maybe close to 100 people in that auditorium. And little kids who like were two hours into their zoo visit and, you know, all jacked up on zoo treats and exhaustion and kind of all over the place. And sometimes I'm trying to give a presentation and there's like four kids, just kind of like freaking out in the front row, you know, whatever.

Hilary Swarts [02:37:01] But the second that cat would hop up on the table, you could hear a pin drop. People were so absolutely captivated, and after that like there'd be just total silence, you would just hear this collective gasp like, "Aah", from the audience to be able to see this beautiful animal, you know, right before their eyes.

Hilary Swarts [02:37:31] So when we can, we try to provide as much, visual, whether it's photos or in the case of Sihil, um, you know, live ocelots to really, to really bring people in, to draw them in and get them excited.

Hilary Swarts [02:37:47] Unfortunately, rest in peace, Sihil was euthanized last year. She had been an amazing ambassador for her species, and I can't remember how old she was, maybe 17 or 18. And she just, you know, she had, she had lived a full and exciting life, and it was time, I guess, for, I think her system was sort of setting down. So that was incredibly sad for all of us.

Hilary Swarts [02:38:21] But I think about how she sort of lives on in the memories of all of these people who came to see those presentations.

Hilary Swarts [02:38:29] And so. You know, for me, that's been so much fun. And I love to hear the questions. Like some of the questions that are way out there, and some of the questions that show that somebody's been really paying attention to this process for years.

Hilary Swarts [02:38:48] So that that element of my job that I wasn't really expecting so much, has actually turned into one of my favorite parts of the job because. I always say you can't ask people to care about something if they don't know it exists. So the first step is making sure they know it exists and that it needs their help. And, and I think, you know, we had, I don't remember, this weekend, but hundreds of people, maybe up in the thousands, who came through for the for the Ocelot Conservation Festival, and we didn't even have a live ocelot this year. So I think, I think the interest is out there, you know, and it's just kind of tapping into it.

Hilary Swarts [02:39:33] And, and also, I think having an approach that mindful that I mean, for me, I just want ocelots to exist because. Right? I feel like they have intrinsic value. They're part of the ecosystem. They deserve a chance just like anyone else.

Hilary Swarts [02:39:53] But there are people who don't care at all about ocelots. And I, and that's OK. You know, I have things I don't care about. I always say, I don't care about shoes. Some people are crazy about shoes. I don't care at all about shoes. That's okay.

Hilary Swarts [02:40:06] But then when I try to figure out, "Okay, if you're not that into ocelots, is there anything that you are into that's indirectly benefiting from our efforts at ocelot recovery?" And in that way, there are actually a lot of benefits, you know, this habitat restoration being probably, well, land protection and restoration probably being the greatest. Because, you know, if you're a hunter, you need your game animals to have somewhere to live. If you're a birder, you need your birds to have somewhere to live. If you live on the coasts, you want to have something that's going to absorb those storm surges. And certainly natural habitat is a lot better at that than paved roads. I mean, think about Houston, which is anytime there's any significant rain, they're looking at serious flood situations because the, the natural habitat acts as a sponge. And when you get rid of that, you get rid of the capacity to hold some of that water.

Hilary Swarts [02:41:15] So I think there are a lot of, of sort of secondary benefits that come from this work. And you know, I'll, I'll try as many of them out as I can to try to reach people where they are, I guess I would say.

David Todd [02:41:39] That's a great way to sort of sum it up. You know, you're in many ways, I guess, a teacher, but also a translator to try to figure out how do you reach people, whether it's, you know, that they like to hunt or bird or they're concerned about their home on the coast.

David Todd [02:41:58] Well. I would just have one more question, and I notice that you had worked on the 2013 and 2016 Recovery Plans, and then on the Five-Year Review in 2018, for the ocelot. And I'm curious when you have that sort of 30,000-foot view of the ocelot, what, what do you foresee? Where, where do you think the future might take this animal?

Hilary Swarts [02:42:34] I mean, for me, right, I think I've probably emphasized this more than enough, but for me, it's a long, it's the long game, right? So I think that a slow and steady and consistent investment in habitat protection, in establishment, in education, in raising people's awareness. I'm optimistic for these cats. I think, you know, there's, I don't know, I guess, I think like looking at some of my friends' kids' stuff that they're learning in school now, you know. Like I don't think I heard the word conservation, I don't know, I mean, in the, in the context of her nature conservation, probably until college. And these guys, fourth graders, are coming home with workbooks that talk about ecosystems and habitats and stuff, you know. That's just a whole a whole change of perspective.

Hilary Swarts [02:43:42] And yeah, it's not everywhere and it's not everyone. But I think, I think we're growing into a culture that increasingly appreciates the thing we've been exploiting for so long. I mean, you know, all these weather events and fires and all that kind of stuff. I think people who maybe hadn't been paying much attention, it's in everybody's face now. So I'm hoping that, you know, there's just sort of an ongoing cultural mindset that, that there's value in nature, that there's value in these species.

Hilary Swarts [02:44:20] And certainly, you know, some of the recent bills and budgets that have been passed, you know, really favor actions that will help this cat out.

Hilary Swarts [02:44:33] There are certainly, gosh, there's probably more people than ocelot in Texas who care and have an active role in helping, you know, recover this population and improve the situation for them.

Hilary Swarts [02:44:48] So I feel really optimistic about it. But I think again, it's all about patience and it's all about appreciating that it can take a very short time to break something down and a very long time to build it back up.

Hilary Swarts [02:45:03] But I think there's a will here. I mean, politics always has a way of turning things you thought you understood on their head and all of that. But I think separate from the sort of year-to-year variations, I think we're moving toward a society that does place more value on protecting and caring for nature and really embracing stewardship.

Hilary Swarts [02:45:34] And so that gives me hope for these cats. I think, you know, that, I don't think Texas will ever be overrun with ocelots, but I don't think Texas ever was overrun with ocelots. So, you know, getting them to a point where we're not as concerned about the genetics, the genetic challenges. I think that's a big one.

Hilary Swarts [02:46:02] I think the fact that TXDOT has really embraced these wildlife crossing - undoubtedly we're going to lose more ocelots to vehicle collisions - but hopefully fewer and further between as time goes on.

Hilary Swarts [02:46:16] So, you know, I think you can't do this work if you have a doomsday feeling about it unless you have a really strong constitution. For me, I couldn't do this if I didn't think there was purpose. And what's been fortunate for me being in this position as long as I have is I've seen it. I've seen changes happen on the ground that are making a difference, and that's in eight years. You know, stretch that out a few decades and you're really getting somewhere. So I think as long as, as long as I keep realistic about my expectations in terms of a time frame, I feel good about what these cats are going to, are going to be able to kind of do here. And I think we'll get to a place where...

Hilary Swarts [02:47:15] I mean, right now, the loss of one ocelot is like a hit. It's a real hit to the whole population because we're dealing with small numbers. I'm not saying that there'd ever be a time that I wouldn't be sad to hear about the loss of an ocelot. But I'm hoping we get to a place where that's not, in and of itself, a tragedy of genetic material that will never be recovered and the loss of a potential breeder who was sort of the one hope for, for repopulation in an area.

Hilary Swarts [02:47:50] So yeah, and the people who work on this and the people, I have had the pleasure and honor and privilege to work with, their passion runs deep. And I don't know that there's anything that can serve a purpose more than having incredibly dedicated individuals working for that purpose.

David Todd [02:48:22] Well, this is really, really encouraging. Thanks for not only doing this work, but, but, you know, sharing the, the passion you clearly feel for it and, and your optimism and I think your message of patience. I'll try to take that to heart.

David Todd [02:48:43] And thank you so much, Hillary. I really am so grateful for your time today.

Hilary Swarts [02:48:49] Well, I'm so grateful that this is a topic of interest for your project. I mean, I think these cats are fantastic and they definitely, you know, deserve a place in, in Texas conservation history. And I'm so pleased that you reached out to, to try to capture some of that. And I hope you know others who engage in this work will, you'll get their stories as well because, you know, mine is just one perspective.

David Todd [02:49:22] Well, a really valuable one. And so thanks again, and I hope that our paths crossed, but until then, take care and enjoy your time down there in beautiful South Texas.

Hilary Swarts [02:49:36] Thank you so much, David, and again, thank you so much for this opportunity. I look forward to the seeing this product with everybody's input.

David Todd [02:49:46] Great. Me too. All right.

Hilary Swarts [02:49:48] All right. Take care. Thank you.

David Todd [02:49:52] Bye now.

Hilary Swarts [02:49:52] Right.