Doppsee The Pregnant Rhino

[00:00:00] Good morning, everyone. You're listening to the Sci-Files and exposure segment, featuring Michigan state university, student research where you cohost Chelsie Boodoo and Daniel Puentes. Good morning, everyone. Daniel and I are here at Potter park zoo in Lansing, Michigan at Potter park. There is a pregnant black rhino named Doppsee

[00:00:23] She's getting an ultrasound done today. Daniel. And I are here to interview the students, zookeepers and doctors that [00:00:30] are working with topsy throughout her pregnancy. The students now will tell their side of the story. Hi, my name is Bridget Walker, and I'm a third year at the Michigan state university college of veterinary medicine.

[00:00:42] And this summer I got to work with dr. Ronin as his summer student. And I spent a lot of time over with topsy. I'm observing her ultrasounds, which are a special way that doctors can look and monitor pregnancies and also helping out with her blood draws, which is a good way to track her hormones throughout her pregnancy.

[00:00:59] And [00:01:00] these hormones are really important to a healthy pregnancy. And what is a hormone? Anyways, a hormone is a special chemical in the body that organs used to talk to one another and it helps to coordinate biological processes within the body. Like whenever rhino gets pregnant, like whenever rhino gets pregnant.

[00:01:19] And what hormones are you focusing on specifically? The biggest focus pregnancy has been the hormone. Progesterone. Progesterone is one of the biggest hormones in [00:01:30] pregnancies, and it's absolutely essential to maintain the pregnancy for the right amount of time and ensure a healthy baby. How do you draw blood from a rhino safely without getting kicked by it?

[00:01:39] For example? Yeah. So that is something that takes a lot of teamwork. So the first step in getting an animal to voluntarily blood draw or an animal that lets you draw blood while it's awake and it knows what's going on and it just lets it kind of happen. comes from the zookeepers and the animal itself.

[00:01:56] So the zookeepers worked for months for a really [00:02:00] long time to train topsy, to stand still for blood draws and let herself be poked in the leg with a needle, which is something a lot of people don't even really like to sit still for. but the zookeepers have her stand on a block with one leg and it puts a lot of weight on her other leg and makes her vessels really stand out.

[00:02:17] And, she. Does this for her favorite snack? So she gets alfalfa cubes, sweet potato carrot, romaine lettuce. she works for a lot of different snacks, so she pretty much stands there and gets snacks and gets one little poke in the leg. Hopefully [00:02:30] sometimes it takes more than one poke in the leg. And so if she decides that she's done for the day, or she doesn't really want to cooperate that day, she's in a shoot and both ends of the shoot are open.

[00:02:41] And so she can leave at anytime and walk away. And once she walks away, if she doesn't want to come back, it's done for the day. And if we don't get a blood draw that day, we don't get a blood draw that day. And that's fine. And that twice that she has to walk back and forth and go away and maybe come back is really important because it keeps her really low stress.

[00:02:59] She [00:03:00] never feels like she's trapped anywhere. She can go, she can go and come. And she pleases. Thanks for that wonderful introduction about topsy Bridget. Now we're here with a group from the large animal clinical rotations. Can you please introduce yourselves? So my name is Peter Fowler. I'm a fourth year vet student at the college of veterinary medicine.

[00:03:17]we were given this opportunity. we're real excited to see topsy. I've never actually, been out here to see topsy before, and I know very little about rhinos. We cover a lot of animals. Through our veterinary [00:03:30] education, but, this is kind of a unique opportunity we're given right now. So I'm looking forward to seeing how an ultrasound is done on a pregnant right now.

[00:03:38] Hi, my name is Sumana provoca. I'm a fourth year veterinary student as well on the large animal clinical rotation. I think the thing I'm most excited for today is. You know, we get to learn a lot about dogs and horses, kind of like what Peter said. And we do learn a lot about, you know, tracking pregnancy and tracking hormone levels that Bridget [00:04:00] talked about in these animals.

[00:04:01] And I think we're really excited to see how they're going to translate that into a rhino. And it's going to be a really exciting way for us to compare our different species and hopefully also be able to apply it to other rhinos around the country as well. My name's Ashley Shoemaker. I think that.

[00:04:20] Michigan state university prepares us for a lot, in our program at the college of veterinary medicine, but there's [00:04:30] not a lot of information about exotic species. not a lot of information about our zoo species. we get that opportunity through different clubs and things to kind of delve into that if we're interested, but I'm seeing this as.

[00:04:45] A rare and unique opportunity as, as we've said before. And not only that it is rides us the chance to learn more about animals in general, learn more about, our large animals, our [00:05:00] cows or horses, and compare between what we see here today are Zeus species and what we'll see in the future. what would see every day I'm over at the school.

[00:05:11] So. It's a very unique opportunity. My name is Bethany Meyers. I'm also a fourth year vet student at Michigan state, I think, today, just to reiterate what everybody else has said. It's a really big opportunity to get, to see and work with a black rhino like topsy. and it's also a [00:05:30] really big. Learning opportunity for us too work.

[00:05:34] Like they said, we're constantly comparing dogs and cats to cows and horses, and what's similar and what's different, but we're also on a daily basis in our profession.

comparing those dogs and cats to ferrets and, and other exotic animals. So the same thing that, you know, we're doing on a daily basis, these.

[00:05:58] Zoo veterinarians are doing, [00:06:00] in their lives. And they say that it takes a village to raise a child, but it clearly takes a profession as a whole to raise a rhino. And so it is really cool to see how we're taking what, what the world already knows and what we're learning from topsy, and how to incorporate those to, promote the species.

[00:06:16] Yeah. As a whole. Thank you all for those incredible introductions. What is the rotation anyways, Bethany. So that's a really good question. A lot of times, as veterinary students, we get asked what school looks like for [00:06:30] them. How long were in school by the time we're done? Are we real doctors? so you take four years of undergrad to get a, bachelor's just like lots of other degrees do.

[00:06:39]whether that's a major in animal science, psychology communication, we, have students in our class. Who've been lawyers before all different professions. Then after that we were accepted into vet school, which they say is the hardest part getting in. But I will tell you that vet school is very hard.

[00:06:56] Anyway, first school is vaguely a four year program [00:07:00] at Michigan state. The curriculum that the five of us here have completed or will complete, is two and a half years. Of didactic learning or learning that we do in a classroom. we have lectures, we have exams. We also have various labs that we do to have hands on experiences.

[00:07:19]after those two and a half years, we've had, or will have a year and a half of clinical rotations. Those for us at Michigan state university are three [00:07:30] week long. Blocks where we'll rotate between different aspects of veterinary medicine. So we have some, we have a block for cardiology. We have a block for emergency services and small animal.

[00:07:43] We have the large animal block that the four of us are on right now. and so we'll rotate through various rotations, within the. Veterinary teaching hospital itself at Michigan state university. And then we also have the opportunity to do various externships [00:08:00] or rotations outside of the teaching hospital, so that we can better prepare ourselves in areas of the field that we don't necessarily get exposure to.

[00:08:09] Alright, so mana, what can you learn from your clinical rotations versus your classroom settings? So I think one of the most important things we get in our clinical rotation is, you know, we go through about two and a half years of getting to see professors and people who are really knowledgeable in their field present information, but then we actually [00:08:30] get to see those animals and see how they present to us.

[00:08:33] Right. I'm in the hospital setting. So as students were able to, first start is taken a good history. I actually do the physical exam on these patients and then get to converse with a clinician who's very knowledgeable in whichever rotation we're going through. and, you know, get their opinion on it as well as.

[00:08:52] It kind of opens up a whole discourse on how we're feeling about that case and how we want to treat it. So when we kind of talk [00:09:00] about DOB, see, I think one of the really important things is we get to, really see how we can examine these patients and get to put our hands on them and the different things we feel and compare it to some of our other species as well.

[00:09:14] When I hear an ultrasound, I often think about when a pregnant woman goes to a clinic, a clinical setting, and they get that gel rubbed over their belly. And then they rubbed the, a device to see the fetus inside the woman. What does it look like to [00:09:30] perform an ultrasound with the rhino? So a lot of it looks the same just on a lot bigger scale.

[00:09:36] So we have a special ultrasound probe, which is that device that they use to contact the belly, for Dotsie that reaches further because she's a rhino she's really, really big. And so these ultrasound probes emit. A sound wave that we can't hear, but it bounces and interacts with these tissues. It bounces back and that's transmitted to an image on a screen.

[00:09:58] And so that's how an ultrasound [00:10:00] works. And so this special probe is made to go deeper into tissues, and deeper into space. So we get a good picture of hope, fully baby rhino. So that's something that we really want to see today. We've seen the baby rhino and ultrasounds before, and one of the zookeepers actually.

[00:10:16] Got a video of the baby kicking from inside of Dempsey. so that's on Facebook. If anybody wants to go check it out, it's really cool. so today we're just going to be looking for a healthy baby. Hopefully it'll go floating by at some [00:10:30] point because she's a big lady Diopsys big. so it can be difficult to find the baby sometimes, but we know it's in there somewhere.

[00:10:36] I would imagine a rhino has much thicker skin than a human female. What kind of machine goes into this? Like how strong does the machine have to be for a rhino versus for a human? And do they still put on the outside or do they need to go inside of her to do this ultrasound? So the machine itself isn't necessarily different.

[00:10:58] It's the probe, that's a little bit [00:11:00] different and there's different shapes of probes and there's different. my amount of energy that these probes emit. So Diopsys probe that we have for her. It goes further, but it doesn't give us quite as good of resolution. So the picture might be a little bit fuzzier, but we know we're looking deeper into topsy.

[00:11:15]and so there are two different ways that we ultrasound topsy. We do what's called a transabdominal, which is outside just like you would do on a human. And then we also do trans rectal. Which is where you put on a plastic sleeve up to your shoulder with the ultrasound probe, [00:11:30] and you go through her rectum to look at her uterus and to look at the baby.

[00:11:34]so that might be a little bit disconcerting to humans, cause that's definitely not something that happens in human practice, but for large animal medicine, which is the closest we can get to rhino medicine. that's a really common practice. It's something that's done on these animals and there are some risks with it, but generally it's pretty safe.

[00:11:53] I'd imagine, say for the rhino, but what about the human? Like how does a rhino react to a transrectal ultrasound? [00:12:00] So that's something that, again, the zookeepers have worked really hard to get Dotsie to train for. She will stand for it awake. She's a really, really good rhino. So there are days where she decides she's not feeling it and she's going to walk away and doesn't want to deal with it.

[00:12:14] But for the most part, she's pretty well mannered. And she'll just stand in. Let it happen for snacks,

[00:12:23] you to all the students that gave us their input on their experiences in the vet med program. Now we're here with the doctors. We're [00:12:30] here with doctors Trek, Coda, dr. Carlton and dr. Ronan. Dr. , can you please tell us a little bit about your experience with this? I saw you over there with topsy conducting the ultrasound.

[00:12:41] What is your role in this? So I am actually a nontraditional resident at Michigan state university. And so I, and my mentor is actually dr. Carlton and dr. Roberts. And so I'm here just learning as well. and so I'm learning about the black rhino lipo, different things like that. inpatient, which means their [00:13:00] placenta and what type of placenta they have and just, or trying to learn more about what the pregnancy in the black rhino is like.

[00:13:06] And we're able to do that because topsy is so willing to be an active participant throughout Diopsys pregnancy. What experiences and skills have you gained and learned? Yeah. So for me, I, have had the opportunity to trans rectally and trans abominably ultrasound her, and to get an idea of actually what her uterine horns look like.

[00:13:26] So the anatomy of a uterus, and we've also been able to see [00:13:30] things on transabdominal ultrasound, like parts of her placenta, like the amnion is. The one thing you heard us say today, that we could see glimmers of that. and so those are things that we've learned along with just, interacting with Dempsey.

[00:13:43] What is an amnion and what is the advantage of doing a transrectal versus a transabdominal ultrasound? And Amnon is part of the placenta. It's the part that surrounds the actual fetus. And so, we're just looking at that as well. A marker. So you can look at the difference in the [00:14:00] fluid, within the actual amnion versus surrounding the coil on toast, and to make sure that the pregnancy looks healthy, that we don't have concerns that there's an infant section thickness within that tissue.

[00:14:13] Those are things that we're looking for. Initially early in the pregnancy, if we were to look at her pregnancy transabdominally we wouldn't see anything because that pregnancy isn't far enough along in gestation. And so that little embryo then becomes a fetus, right. As we get organ development. And so [00:14:30] initially trans rectally was the only way that we could see her pregnancy that eventually actually we could see it.

[00:14:35] Transabdominally and that's when it. Has become more exciting because we actually can see the fetus, we can see bony structures. and so you get information about, the pregnancy from both routes like you saw today. Eventually we should be able to see her fetus up in her pelvic canal. And then we know that it's in position for parturition and by Patricia.

[00:14:58] And you mean giving birth in [00:15:00] layman's terms? Yeah. Yep. So parturition is the active. Part it's, there's three parts to our tuition, but it will actually be active labor in the fetus coming through the pelvic canal. Since we're in the latter stages of pregnancy. When is she expected to be due? So topsy is expected to be due on December 25th.

[00:15:19] But the thing to know is that that range is up to a month. So that can mean around Thanksgiving and as late as late in January, she could give birth. Are you able [00:15:30] to determine the genders since she's so close to giving birth? So we have not been able to see, any gonads for, to tell you if it was a male or a female, but is it possible if we got the right view?

[00:15:41] Yes. How'd you get involved with this project in the first place? So Michigan state and Potter park zoo has a good relationship. As far as we collaborate on different cases and different species. And dr. Carlton is actually the person who introduced me to dr. Ronan. And so we've seen a variety of species.

[00:15:58] I've actually been here to help. [00:16:00] inseminate some of the heifers. So we're waiting to see if they're pregnant. And so we work out here on a weekly to monthly basis, learning different things about species and dr. Ronan also collaborates with us so that we can learn and he can learn. So we know things, for example, I'm my background is equine.

[00:16:18]and so there are things that I know we just were walking over, talking about the SICAM of the horse. And so he's learning from me and I'm certainly learning from him. How does it. Your experience with equine translate to Darcy's [00:16:30] pregnancy. So in practice, I was, I'm a general practitioner in equine, in Michigan.

[00:16:35] And, now back to doing primary care work and doing my alternate residency. And so things that I can correlate to is. There's a little fetus inside of her. And there's a lot of similar things. When we look at bony structures on an ultrasound, regardless of it's a horse, a cow, a cat, or a dog, there's all features that we're looking for.

[00:16:55] And for the health of the pregnancy, regardless of species I'm with Darcy, she is [00:17:00] somewhere to horse in some ways. and so like today we were talking about parturition and getting prepared and what sort of supplies we may need. And those things correlate. Amongst different, large animals, cows horses, cetera.

[00:17:14] We're also here with dr. Carlton, dr. Carlton, can you tell us about your experience with Darcy's pregnancy? I've been involved with, Dempsey's pregnancy as well as other rhino pregnancies and some other exotic species that I have been working with since in [00:17:30] Zurich since 1981. So this is just a continuation of others, the work that I've been doing, what are different things that you've learned throughout Diopsys pregnancy?

[00:17:39] One of the things that's been quite curious is normally on an early ultrasound, of course, cause the species have some similarities is you'd be able to look at the, the uterine horns via transit, transrectal ultrasound and see that early pregnancy. And with DOP seas, we've been able to see the tips of theatre and horns, but that area where [00:18:00] the, the uterine horns converge at the uterine body on the midline.

[00:18:03] At the middle of the pregnancy seems to be taken a really steep dive at a much earlier stage of pregnancy than we'd see in the horse, which has made it more difficult to track the pregnancy trans rectally compared to the horse. So we ran into a. A portion of her exam, where we could find the tips of the horns.

[00:18:21] We could find nothing of the pregnancy whatsoever, but as we started farther, along in the pregnancy to the point that we could see structures, transabdominally, [00:18:30] we've been able to do a much better job, a much better job of tracking the fetal parts and looking at ribs and spinal column, the amnion, the placental membranes.

[00:18:40] And actually even the lining of the uterine wall with some enfolding and that enfolding or that redundancy happens as the placenta develops. Cause you need additional uterine attachment space for enough placenta to sustain a pregnancy to term. Speaking of horns that got me thinking about, you know, rhinos have horns after they've [00:19:00] matured, do they grow these horns also while they're in gestation during a pregnancy?

[00:19:05] Or how does that all work? So what, at the time of, of birth, you're going to have the, the bony structures of the head or the skull of the neonate, where you'll see where the horns will develop. But clearly they don't develop in utero during parturition. That would make it a little bit dangerous or free from mom during birth.

[00:19:23] So those you'll see evidence of where they're going to develop, but they won't be present at the time of birth, but they come [00:19:30] along, you know, fairly quickly after that within the first year or two of life, you'll start seeing difference. Differences in those growth of structures. What features have you seen that have been developed already within the fetus that you saw today in the ultrasound?

[00:19:44]both spinal column, rib cages. We saw some more evidence of placental thickness along the uterine wall. We had against some of the night's redundancies of that, of the uterine wall itself and had some other very good images of the amnion amnion. [00:20:00] And then one of the things we've got a first really good glimpse of today was the biparietal diameter, which is again, looking at the size of the head of the fetus and the size of the fetus as it develops is of particular interest because we've done our trans rectal exams.

[00:20:14] We know how big the pelvic space is the birth canal through which the fetus has to pass. And then if you had. An overly large fetus that could be problematic so far, everything seems right on track. So the size of the fetus should not have any difficulty passing through the birth [00:20:30] canal. Whenever she's giving birth, is someone going to be there with her to pull out the fetus or does she do it completely by herself?

[00:20:39] The things that we can do with domestic species are in a completely different realm when you're looking at exotic species and animals have that even as tolerant as topsy is for all of our exams and is accepting of the procedures. And that truly is a testimony to. The veterinarian here, dr. Ronan, as well as the keepers who are just the heroes in this [00:21:00] entire thing, that when it comes times for doxy to give birth, we have a camera set up now in the stalls.

[00:21:07] That is, is great, detailed for that. And we have a monitor that is, far enough out of her line of view that we can actually monitor her as she approaches term. And, and by being able to actually see those, those images, we'll have people as she gets close to term, memory development has enlarged. So we know she's close to producing milk.

[00:21:28] Well, we'll see some [00:21:30] evidence of colostrum that first milk that's essential for the neonate will have that evidence. But when she actually starts to give birth, the critical thing is you're not going to dive in the stall. You're not going to be able to provide the assistance with the vaginal deliveries you could do with the domestic species.

[00:21:45] So the critical thing is that she's observed. And if indeed we have any delays at all, or if it seems it's going badly, then we'll have to go to a general anesthesia and assist with delivery. So we hope that's not the case. The term that's appropriately used for her is premier [00:22:00] Paris. It means it's her first pregnancy.

[00:22:02] So she's never given birth before. She's never had therefore a baby at her side. And so when you have a neonate, the critical thing is, is she's going to give birth normally, which we hope. And if we have a normal neonate or side while she accepted, and that's another critical thing that since it's a new.

[00:22:20] Factor a new experience for her are really are good hopes, are that her kind personality and the way she takes everything else. So calmly will [00:22:30] also relate to her being a good mom and very accepting of the neonate stage one is that birth takes place. It's there in the stall. We hope she'll let it, Continue living and not get stomped on or injured in any way, but the more critical thing is then will she allow it to nurse?

[00:22:45] And so again, the other thing the keepers are doing, that's really essential is as we're examining her, transabdominally, we're also touching her mammary gland or touching the teats of the mammary gland and getting them used to touch. So when the [00:23:00] neonate stands up and nurses and cycles for the first time, she'll tolerate it without having any issues with that.

[00:23:06] And hopefully not reject it. Since embryos are pretty tiny comparatively for large size animal, especially a rhino. How are you able to tell in the first place that topsy was pregnant anyways? Well, it goes back to a little bit farther than that than the early pregnancy. It's the time of actually breeding.

[00:23:23] So the rhinos have a really interesting cycle. So when she is. In a cyclic [00:23:30] phase, having an estrous cycle, she'll have a short time when she is actually receptive to the male. So we have a lot of videotape at the time of her first cycle in which she didn't get pregnant. And we were watching her activity and Phineas is the name of their mail.

[00:23:47] And Phineas would approach her and she let him know in no uncertain terms that. Not now. And they actually tipped her one horn because they said when rhinos are breeding, it can be very violent and unless, [00:24:00] and she usually hooks them with her horn and means of saying get away. And so they took the horn and they said, you don't worry about it, unless it seems arterial.

[00:24:08] Cause you'll expect the mail to come up a little bit, bloody drainage, the breeding process. So he actually covered her and ended up what we call a live, cover, a natural breeding on one cycle. And then what you're looking for as you're tracking progesterone, one of the hormones or pregnancy, and you're watching to see if that is, is at a normal level.

[00:24:28] If she's coming back and heat and will [00:24:30] drop, if she's pregnant, it stays elevated. And in that first instance, we knew within a few days of sending off the blood samples, That she was not pregnant. And that was the earliest indicator that she wasn't pregnant. She came back and he'd again. And so we had another live cover library thing by Phineas topsy, and the progesterone level stayed elevated.

[00:24:51] We can't do the early checks as much as we do on horses. Sometimes at 15 or 16 days, some people do it even earlier than that. [00:25:00] And it was after that point, when the progesterone stayed elevated. That we then continued on with our trans rectal palpation and ultrasound, and first saw evidence of the pregnancy itself as a final question, dr.

[00:25:12] Carlton, why is Darcy's pregnancy so important? Well, for me, it's a matter of recognizing that the loss of a species that's as charismatic and as interesting as topsy is with the black rhinos in there. They're small numbers that we do everything we can to try [00:25:30] to. Preserve them. I mean, she's really extraordinary anyway, but that loss of that, that species to me would be rather sad.

[00:25:37] One of the realities in the zoo world is that you have to have some charismatic species that can actually help bring in money and attention from the public so that we can actually maintain other species that might be. Less interesting to other people. Biodiversity is essential for the planet. And to me, Diopsys just part of that.

[00:25:57] The species survival plan that is really [00:26:00] managed by the zoo world is absolutely critical to look at the genetic material in diversity, to make sure that we have good breeding of animals that can maintain the best of the best and, and have a species that I think is really critical to what we're. Really losing in the world right now.

[00:26:18] We're not doing a very good job of managing the only home we have, which is mother earth, you know, it's like, we've got to do better and she's a part of that plan. Thank you, dr. Carlton for all that insight for the work that you're [00:26:30] involved with when it comes to adoptees pregnancy. Next, we have dr. Ronan and he'll give us a little bit of an introduction to his role with Darcy's pregnancy now.

[00:26:39] So yeah, my name's dr. Ronan. UCIS I'm the director of animal health. For a Potter park zoo. So I'm the sole veterinarian at the zoo. so I take care of coordinating the medical care for all the animals at the zoo. also I help coordinate research. you know, so when someone applies for doing research at the zoo, I'll help evaluate the study to make sure it's appropriate.

[00:26:59][00:27:00] yeah. So for DOP, so she's part of the collection. So she's one of the animals that, I helped take care of from a medical point of view. So just like how a human

female will go to her OB GYN and get routine checks throughout her pregnancy, we do the same thing with the animal. You mentioned that there are research projects here at the zoo.

[00:27:17] Are there currently any research projects going on with gypsy in her pregnancy? Yeah. So she's, I'm part of an ongoing study. That's being led by dr. Monica stoops. Who's a reproductive specialist based out of Omaha zoo. [00:27:30] Also, she collaborates with Denver zoo and with crew, which is the center for research of endangered wildlife, which is based out of Cincinnati zoo.

[00:27:37] And she's the lead researcher on any Brian and reproduction topic. And so. We draw blood on dropsy once a week through, voluntary train behavior. So topsy goes into a shoot and allows us to draw blood from her awake. And we, some of the blood and we'll submit to her to monitor her progesterone levels.

[00:27:54] And, she's working with a researcher based out of UC Davis veterinary school to determine [00:28:00] a test that will actually say what stage of gestation, what date of gestation, a black rhino would be based on a single blood sample. How do scientists and veterinarians come up with a scheme to determine which rhinos are relevant for reading with each other and which ones would have the best outcomes for the pregnancy.

[00:28:20] So all the endangered species at the zoo are part of a species survival plan, and the species survival plan has a stud book coordinator. Who works with the population management [00:28:30] center based out of Lincoln park zoo, where those are PhDs, who basically say this individual is least genetically related to this individual and, they'll model the population.

[00:28:40] And they'll say, we should read this individual with this individual. And then they'll talk to the studbook coordinator who will then. Tell the different zoos and say, you agreed this one with this other individual to try to maximize the genetic diversity. So all these populations we're trying to, our goal is to be sustainable over a hundred year period, and to maintain 95% [00:29:00] genetic diversity, that being said.

[00:29:02] Current ACA, most current AZA SSP populations. Aren't sustainable because, it's just challenging. So we're actually in, what's called a sustainability crisis right now when we look at all the different ACA populations. And so we're trying to figure out. How are we managing these species? And if we can do it better for a species like the black rhino, it's challenging because there's only about 60 in captivity.

[00:29:24] And if you think about those 60 in captivity, you're going to have probably 30, who are female, some are going to be post [00:29:30] reproductive. Some are going to be pre reproductive. Some might have never bred before. so it's challenging with those low numbers to actually be sustainable. so the assisted reproductive technologies and the, the more information we can get on normal.

[00:29:44] Black rhino reproduction. So we can maximize being able to breed these individuals in captive is key. It's just key. So can you please define what is ACA? So, it's an association. I was doing aquariums, so there's about, I don't know, [00:30:00] approximately

10,000 exotic animal, dealers zoo. You know, farm type things with exotic animals in the U S and they're all regular by USDA.

[00:30:10] Z is a, a subset, it's a about 200 and 200 zoos or aquariums. and they have a higher accreditation standard, much higher standards than say, what the USDA, regulations are. So every five years to be part of the ACA you have a team of inspector from different zoos come out and they go through.

[00:30:29] Everything. So [00:30:30] I'm an inspector. I go and do it. And, you know, we look at finances. we look at, guest services. We look at the animal care, we look at their, do they have an animal welfare program? Do they have a veterinary program? They have a good maintenance, programs. Comprehensive. Cause again, if you fall down in any of those areas, the animal care suffers and, yeah.

[00:30:51] So, and do they have a good time scientific research or scientific advancement? Those are all different categories. There's about 13 different categories. So, or the ACA, you know, as an [00:31:00] expense inspector, when I come out and assess them, if they're. you know, they're, they're reapplying for their accreditation and they're not publishing scientific articles, or if the vet staff or the animal care staff isn't publishing scientific data, if they're not collaborating with zoos or other researchers, that would be something that they could potentially lose their accreditation for.

[00:31:15] So it's a, it's a subset of zoos and we're, we're trying to do best practices. And, and again, the, to be part of the SSP, the species survival plan, you have to be part of ACA. In general. Thanks for that comprehensive view of the ACA back to the [00:31:30] genetic diversity of that we were discussing if doxy had not worked out well with Phineas, what would have happened since there are not that many options out there?

[00:31:38] Like can a rhino be artificially inseminated? Yes. not every species of rhino has successfully. Had artificial insemination. So again, when you you're doing any of these assisted reproductive techniques, there's a lot of scientific data that you have to have ahead of time. And . Partaken in some of those studies.

[00:31:57] So just learning what a normal [00:32:00] Asteris cycle is in a black rhino is sort of the first step. when you think about assisted reproduction, assisted reproductive techniques, it's like artificial insemination, in a human right. You have to do it at a certain point in that person's life to have success in the same.

[00:32:13] Thing's true in a black rhino or any species. So usually it's a people PhD project first to get the first, you know, what is a normal black rhino. Okay. estrous cycle is the first thing. And then you have to find out what drugs you can use to synchronize Astro cycle. And you have to see if those will work in that species.

[00:32:29] So there's a lot of [00:32:30] basic science that goes into it before you start, trying even assist artificial insemination. just tons of it. And people like Mon dr. Monica stoops, the crew with center for research from danger, wildlife, Omaha zoo has a reproductive there's, there's a few different, Research collaborative groups, basic differences that are doing this basic science.

[00:32:49] And, and it's, it's really, really key. Lastly, we're here with Pat fountain, Pat, what has been your interaction with Dopson and your experiences? So I started out here as a zookeeper and, I've been [00:33:00] with topsy literally since the day she got here. So she came here at the beginning of June, 2011. And I've been working with her for about six years or seven years after that.

[00:33:09] And then my job title changed a little bit and I'm the animal care supervisor. So I oversee all the animals and all the keepers, but I still make time out of my day to go see Dapsone whenever I can. What's the difference between your role and the role of a veterinarian? my role is much more of a day to day animal husbandry type role to make sure that that's these needs are getting met.

[00:33:28] On a cleaning, [00:33:30] feeding and observation scale. When watching dropsy get the ultrasound, I realized that she really is a very nice rhino. She interacts with the keepers so well, like you can call DOP and she will come to the keepers, which is better than what I can say for my own cats. How were you able to basically train a rhino?

[00:33:49] Like how do you train a rhino? It starts fairly early. as soon as the rhino gets here. Yeah. We try to spend as much time as possible with them to gain their trust and to find out what they react to. Luckily [00:34:00] for us, topsy loves treats. She's never met a treat. She doesn't like so to get her to do a behavior, all it took was a little bit of time and patience and some.

[00:34:07] Delicious treats. we started off by training her simple things like target, where you ask her just to come touch your nose to something. And then she gets her favorite piece of produce. Maybe it's an Apple or a carrot or a sweet potato. And then we moved on to more difficult things like. Training or for blood draws where she trained, she's trained to place a foot on a block.

[00:34:24] So the vet staff can draw blood from the opposite leg. Or eventually we did start training her for rectal [00:34:30] ultrasounds. Well, before we even had a male, so we'd be prepared for a daily speaking of treats, what is Darcy's favorite treat anyways, her absolute favorite treat. And I can only say it because. The vet isn't listening anymore is mince.

[00:34:43] So if you give her a little star mint, just like you, who are, I would like, she'll roll it around in her mouth and then she'll crunch on it and you can hear it eating it. And it makes her really happy. She'll come to the crinkle of a rapper cause she knows what that means. But on a day to day basis, we do limit the amount of sugar she gets.

[00:34:56] So she gets two carrots, two apples, and a large [00:35:00] sweet potato, for training and or enrichment every day. And then she also gets out, fell for cubes. Like you'd give to a horse or something like that. She likes that a lot too. Daniel. I have been to Potter park zoo many times. For example, we've been here whenever you've hosted an event where different animals are doing enrichment activities.

[00:35:15] What are some enrichment activities? Autopsy partakes in for the rhinos? We do a couple different types of enrichment every day for them. It's really important for us when

we have an animal that large to keep them motivated to move around too. Do things that would be [00:35:30] natural for their behavior, things that they would do if she was in Africa.

[00:35:33] So we may take a branch and hang it up high for because black Reynolds are browsers, they like branches and leaves. it's good for her muscle tone and for her behavior to be reaching up and eating. So we've also recently installed a hay mangers that are up off of the ground. Cause it's typical to feed them on the ground, but.

[00:35:49] After talking to other Ronald professionals, we realized that the best thing for them to be mimicking their natural behavior, they would reach up to grab things. So a lot of it is trying to find different [00:36:00] ways to make them do the things they would do in the wild. Other than that in the mornings, we do something called Contra freeloading, which is a type of enrichment.

[00:36:08] That means that she gets her food and her breakfast presented in a different way every single day. That will just give her. I'm a little more time to figure out what she's doing to find her food. Maybe, two. Just get used to it presented in different ways to occupy her time while we're doing things like cleaning the yard, because we don't like to leave her inside for too long without keeping her busy.

[00:36:29] Otherwise, sometimes she [00:36:30] lays down and doesn't want to get up for the rest. How has diet changed since she's become pregnant? Anyways, her diet stayed remarkably the same. She gets about four kilograms of grain split between two feedings a day, and she gets between seven to 10 flakes of hay, depending on how she.

[00:36:47] How much she's eating for the day. she also gets browse whenever we have it available, we actually freeze browse so we can feed it. Yeah. Over the wintertime. Sometimes we'll actually store, If we have a really good load of wood chips, we'll store them and freeze them because it's really good for their digestive system and for their [00:37:00] teeth too.

[00:37:00] I will actually give her big sticks. If you think of like, a bone or like a greeny bone for your dogs, that's good for their dental. same thing. If we get a big wheel stick, that's a couple inches in diameter. You give it to the rhinos, just chew on it for days. They also get a lot of different, supplements in there everyday because it's not possible to mimic the diet of a.

[00:37:18] African rhino here in Michigan. So things like pedestrian or Lin pro amino acids, and, a whole array of different supplements goes on top of their food on a daily basis. Vitamin D is [00:37:30] another big one. And a lot of that has to do with skin condition and just overall health. You brought up a good point that topsy is a African black rhino, and we're here in Michigan.

[00:37:38] How does the weather and this climate and just being in Michigan affect her since her body's made for Africa. It's very different. She does enjoy the snow. So when she is outside in the snow, she will do this thing where, if it's a nice day, say, you know, in the thirties and we have some nice fluffy snow and no ice, we'll let her out in our off exhibit yard.

[00:37:59] And she'll actually [00:38:00] put her head all the way down the snow and throw snow in the air and then just run around and she'll play outside for like 10 or 15 minutes before she gets too cold. And then she comes inside for the most part. She adapts pretty well. We do give her access to the barn a lot. And in the wintertime she is inside for most of it, not like I said, not so much for the snow because she does enjoy going out in the snow.

[00:38:16] But if it's icy at all, we can't risk her running around, outside and hurting herself. How often do the female and male rhino interact outside of the breeding process, cradles are solitary animals. They only come together to breed. And what typically happens is a male will be [00:38:30] walking around and we'll find a big pile of poop and it'll smell it.

[00:38:33] And it'll say, Oh, there's a girl around here. I should probably find her. She smells like she's going to be in the heat soon. Then he goes and finds her and she beats him up and she chased him away. And this will go on for three or four days where he keeps smelling it. He keeps following her from as closely as he can and he'll approach her.

[00:38:47] And then eventually. As she comes into heat, the hormones that he smells in, the feces, we'll get him very excited and she'll become more receptive until eventually he's chasing her around and then she'll stop and they'll breed maybe for a day or two, and then they'll go [00:39:00] their separate ways again. So here at the zoo, we try to mimic that as much as possible.

[00:39:03] We give them access to each other's poop, basically. we'll leave it in the yards if they're switching yards so they can smell it. And they can know that the other ones around, we try to leave as much of the urine that we can inside, because that's actually really good for them. It's kind of counterintuitive.

[00:39:18] For someone who cleans up after animals all day to leave some dirt and grime, but it's better for the animals overall. So we do, we do do that as well. Whenever the calf is born, what are you going to do about the calf? Is the [00:39:30] calf gonna stay with her? And if so, for how long. So careful stay with mom for between two to four years.

[00:39:35] And that depends largely on one mom's tolerance of the calf. As it gets older, she may get tired of having it around that does happen and then she'll wean it sooner. Or if mom's ready to breed again, they'll usually wean around the two year Mark, if she's not in a breeding situation and we're not pushing her to breed, or there's not a recommendation or whatnot, the baby can actually stay with mom for about four years.

[00:39:56] Well, thank you everyone for coming in today to. Talk [00:40:00] about what your role is with Darcy's pregnancy and allowing us to come view the ultrasound for her pregnancy. It was a really enriching experience for both Chelsea and I, and we really do appreciate it. Thanks again to everyone here at Potter park zoo in MSU.

[00:40:14] If you are curious about dropsy or anything else happening at Potter park, or if you're also interested in donating, you can go to Potter park, zoo.org. Thank you to all of our listeners that joined us this week. And remember. The truth is in the science. Any comments and questions can [00:40:30] be directed to Cy files@impacteightyninefm.org.

[00:40:34] We'll see you all next week. Onsi files.