

Cervidology Part 2 with Rhiannons Jakopak & Kirton

Ologies Podcast

September 8, 2020

Oh hey, it's still the third automatic soap dispenser who finally recognizes that your hand exists. Thank you for coming back to me on your second trip to the bathroom. Remember, wash your hands. Milk the thumbs.

This is Alie Ward, back for Part 2 of Cervidology with the Rhiannons Kirton and Jakopak. Now, if you are tuning in only to Part 2, and you're like, "Wait, who... what is a Rhiannon? What does it have to do with scarves and Welsh mythology?" Head back to Part 1 and listen to it first for a primer on what a deer even is; and there's ungulate gossip, there's fawn talk, there's much more. You're also going to learn that Rhiannon Jakopak has an American accent, and Rhiannon Kirton has a mildly British-Aussie-American accent and says "deeyah" and "hooofs." Both of them are great.

Now, in this episode we answer all of your questions, your burning, irrepressible questions; your cervid curiosities you've held in your heart and you've let explode forth via Patreon where you can join for literally 25 cents an episode. A dollar a month. Which is about a quarter the rate of a parking meter, minutes-wise. So thank you, Patrons, for making the show possible. Thanks to everyone who supports by wearing items from OlogiesMerch.com, and who keeps *Ologies* up among the top science giants in the charts by making sure that you're subscribed and by rating and reviewing - that stuff really matters.

Also, just to show and prove that it matters to me, I pore through the reviews and I pick a fresh one, like this one from Ologite Penelope, who says I'm the dad they never had and that they downloaded the Apple podcast app specifically to leave a review, and now they don't know what to say, but:

Thanks for creating something that feels like a warm, educational hug when I need it the most.

Penelope, get on over here.

Okay, so let's get to this wonderful follow-up episode where you're going to learn how to not hit a deer with your car, and the ethics and the culture of hunting. We talk about chronic wasting disease, deer farts, elk spotting, antler finding. We discuss deer who use crosswalks, deer who are more goth than any of us will ever be. And honestly, one of the weirdest animal facts I have ever learned in the history of *Ologies*. I cannot, cannot, *cannot* believe it's true. It is soul-rattling. Hoo-boy! I envy you that you're about to listen to this interview for the first time. Prepare. Okay, so once again, dear listeners, buckle up for scientists Rhiannons and cervidologists, Rhiannon Kirton and Rhiannon Jakopak.

Alie: Can I ask y'all Patreon questions? Is that okay?

Kirton: Yes.

Jakopak: I'm so nervous! But yes.

Alie: Okay. Will Plewa and Samantha Heinicke both wanted to know if they chew their cud and do they burp methane? Is it kind of like cows?

Jakopak: My advisor is a nutritional ecologist - this is his jam. They are ruminants, so they do have a similar digestive system to cows, whereas things like horses are hind-gut fermenters, so they have a different system. So deer have all of the rumen, they have the chamber that has all the microbes and that sort of thing, as well as cows.

Kirton: I guess there's, like, carbon budgets, or like a balance, right? It's not just what you put out through farts or whatever. *[everyone laughs]* And so I don't know if you can really compare it to cows, other than they might fart methane, because the actual balance of

how much goes in and how much goes out would be different, because cows are usually fed soy, which is a crop, which we farm, and then you use fossil fuels for tractors. It's actually super complicated. I'm not a food scientist...

Alie: Yeah, that makes sense.

Aside: Okay, quick side note: no one's really measuring deer farts, are they? They are. Now, one New Zealand study I found titled, "Comparative methane emissions from cattle, red deer and sheep" read: Total daily methane production from cattle is 140 grams per day, which was greater than red deer (which are elk) at 31 grams per day, which was greater than sheep at 18.3 grams a day. Because you figure they've got smaller buttholes anyway.

Now, because methane is 20-30 times more potent of a greenhouse gas than carbon dioxide when it comes to trapping in heat and poaching the planet, a lot of eyes are looking at cow butts, a lot of fingers pointing toward cow butts (and actually, by volume, more their burpy faces) as a way to cut out our methane addiction. One company in Texas called Bezoar Labs has developed probiotics that can cut bovine belches by up to 50%, which is a measure which could reduce livestock's impact on climate change. But right now, the meat and dairy industries are right up there with transportation in terms of changing our Earth's temperature for the not-better. So if you're eating a cheeseburger on a private jet right now, maybe just try to do one of those things instead of both.

Alie: Ashley Tunney, first time question-asker wants to know: Is it true that deer's antlers can give people diseases? Is that a thing?

Kirton: The antlers specifically?

Alie: Yeah, is there anything disease-wise that you can get from a deer antler?

Jakopak: I don't think you... like... I don't think... no.

Alie: Okay. Good to know.

Kirton: Yeah... I also think... no. Like, if you're talking about picking up deer sheds, then I don't think so. But also, you should always find out from your local wildlife management unit whether you're allowed to pick up deer sheds.

Alie: Oh? Because you sometimes can't?

Kirton: I don't know if it's allowed in all places. I'm just a big advocate of ringing someone, or googling that, before you go somewhere.

Jakopak: Actually, this is something that's been kind of a hot topic in Wyoming recently, and I think is getting to be a bigger topic across the western U.S. at least, is when and where you're allowed to pick up antlers. It's called 'shed hunting'. A lot of people will go out early on in the winter, right after they drop their sheds; if given the option they would go and pick up the sheds right away. And sheds are cool, antlers are really cool, but they're also a really good way to make easy money if you can find them. You can sell them for a ton of money right now.

But if you are out on these animals' winter ranges in the winter, it's really hard on those critters. So, say you're driving around or you're walking around and you scare some deer, those deer then have to run through the snow, which is really energetically costly. And they are surviving on, like, sagebrush and the reserves from the summer so they don't have that much to work off of, so each time you bump them, it can be problematic.

Kirton: In Canada, or at least in Ontario where I live, you are not allowed to remove anything from parks, be it a feather, or a branch, or anything. So, it definitely depends on where you are but also it has larger consequences.

Alie: So two out of two Rhiannon cervidologists agree to check with your local wildlife management before shed hunting. And think about it every time you're about to scare a deer. You just took a few bills out of their winter energy budget. [*Come on, maaaaan!*]

Ellie Abbott, first-time question-asker, wants to know: What does deer social structure look like? We have a few moms, and babies, and bucks that pass through our yard. Do they interact with each other? Are they friends? Do they hang out? What's their deal?

Jakopak: Yes! Oh my gosh, I'm so excited. [*everyone laughs*] Yeeesss! Okay, cool. Most of my research is on the ramifications of deer social structure. [*DJ airhorn!*] So I'm very excited to talk about this question.

In white-tailed deer (and we think also in mule deer, though it's been studied less extensively) there's this idea of the rose-petal hypothesis, it's this spatial arrangement of animals. So one mom will have her little home range, and then she gives birth to a daughter. That daughter lives, and then that daughter sets up a home range really close to her mom. These home ranges kind of slightly overlap a little bit, so these home ranges start to look like the petals of a rose, with an entire family group being a single rose. And normally that family group is what we'd call a matriline, so it's a group of female family members. And then, evolutionarily, the males should disperse to prevent inbreeding. [*cowboy voice: "Go on now, git!"*]

Aside: Okay, so imagine a rose with overlapping regions, and it's just like a bunch of aunts, and sisters, and daughters all kickin' it, *Steel Magnolias*-style, just chitter-chattering, and then some unrelated dudes come into town like, [*low voice*] "Hey, ladies."

Jakopak: But the social structure of deer kind of ebbs and flows throughout the year. So when a mom is about to give birth, she will kick off her last year's offspring sometimes, like super, super violently. [*everyone laughs*] I have seen this before. And a graduate student at the University of Wyoming, Ashley Ray [phonetic], is looking into this, but basically, deer can kick with their two front feet, like, "Go away! Get away from my new fawns!" And so they will super isolate themselves from everyone else. But then, over time, like a month or two, those family groups will kind of come back together and it's normally females; sometimes last year's male offspring are tolerated. And then the bucks are off kind of doing their own thing in what are called bachelor groups. [*Alie laughs*]

And then one question hasn't been evaluated a ton, but I think is going to hopefully be examined quite soon, is: Do they migrate together? Are they in big ol' social groups? Is it just everybody's going in the same direction, so it's just like traffic and you just get funneled together? Who knows? Yeah, their social structure can change throughout the year, but perhaps this listener has a family group in their yard.

And then - if it's okay to go into my research a little bit - this notion of family groups and being connected to your family is really important potentially for how animals learn how to migrate. Migration is really important behavior for a lot of ungulates in the western United States for example, because the areas that are at high elevations are super lush in the summer and make for really good fat gain, which is a really important thing for deer, but they are completely inhospitable during the winter because of snow. Like, super deep snow. So those deer... gotta get out of there.

And so they go down to their lower elevation winter ranges, but those winter ranges, they're great for the winter, but they are definitely not ideal. They're mostly just sagebrush, which is fine, it'll get you through, but it's not what you want to be eating, especially when you're raising fawns. But we are thinking that moms actually teach their offspring how to migrate and where to go. And so we are tracking mule deer fawns from the day that they are born, throughout their entire lives until they die, basically, trying to understand how they learn these migratory routes. Are they adapting the migratory routes of their mom? Or are they not? Are they doing their own thing?

Alie: So they don't have a GPS. They don't have phones with GPS is what you're saying.
[laughs]

Jakopak: Correct! These deer do the same thing year after year for the most part. There are some animals that deviate, but most of them do this same thing year after year.

Aside: This story is wild. I can't stop thinking about it and there needs to be a road trip movie about it. Okay.

Jakopak: There was this one animal that we were studying, that we had had a collar on from the day that she was born, so we knew all of her movements throughout her entire life. We also had her mom collared, so we knew where her mom had been. And this deer was born on summer range, she migrated down to winter range with her mom, hung out on winter range with her mom, migrated back to summer range with her mom. That's exactly what we expect deer to do. This was the typical A-student of a deer. [Alie and Kirton laugh]

But then this deer just decided to, for some reason, just *peace out*. And she just went on a walkabout. We thought that she was going to be dispersing, she went sixty miles up and over mountain ridges, she gained and lost, like, 24,000 feet in elevation. [Alie squawks in amazement.] The highest mountain in Wyoming is Gannett Peak and it is just under 13,000 feet. So this deer climbed Gannett Peak like twice, basically. So she just did this walkabout, and she did that for a little while, and then, truly, on a Monday morning she was just like, "Oh, I'm good now. I'm gonna go home."

[Forrest Gump: "I'm pretty tired. Think I'll go home now."]

Alie: [gasps]

Jakopak: And she just like, turned around. But she took *exactly* the same route back. And we knew exactly where she had been. We had her collared, so we know that she had never been there before. We knew where her mom was, so we knew that her mom had not shown her this route. But she took that exact same route back. So up and over all these mountain ranges, whatever. Keep in mind that I get lost all the time! And I have a GPS! Like, I have a GPS in my hand in these mountains and I am like, two kilometers from the truck, and sometimes I'm like, "Oh my gosh, where am I?"

Alie: I get lost in the grocery store! I'm like, "Where's the bakery aisle?" That's amazing. [gasps in awe]

Jakopak: Right. And these are animals that sometimes that we think are, like, not super smart, or maybe we know everything because we've been studying them for so long, but these animals are *way* smarter than we think.

Kirton: They're super smart.

Jakopak: They're super smart, and they have the ability to gain a ton of spatial information, and use it, and store it potentially for years. They only have to be able to be exposed to a thing one time and then they can just be like, "Okay, cool. This is what I'm gonna do."

Aside: Rhiannon K. also studies deer in space, but not like astro-deer or cos-moose, but deer and where they're at physically:

Kirton: I study spatial interactions between hunters and deer. Deer learn... The hunting season usually coincides with the rut, which is the breeding season. So how Rhiannon was talking about groups of deer, sometimes the bucks live in bachelor groups, but in the breeding season they're, like, competing with each other for females, so they'll split up and be solitary so that they can get the most females. But as part of that, we also have hunting season at the same time in most places. And some deer have learnt about hunters, I guess. There are some studies that suggest that during the hunting season, deer actually become more nocturnal.

They're more active at nighttime to avoid hunters because in most places you're not allowed to hunt... I don't know why I'm saying 'in most places'. Hunting in the dark is generally not allowed, *[laughing]* for very obvious safety reasons. In most places? No, everywhere. So, deer have learnt about the threat of hunters, and unlike other mammalian predators like wolves and stuff, people hunt deer the same time every year. It's always in the daytime, and deer know that. So, they'll become more active at nighttime during the hunting season to avoid people.

Alie: Smart!

Kirton: And where I worked in Montana, I worked right next to the Charles M. Russell Wildlife Refuge and there was an area called Slippery Ann. So, you can hunt in the wildlife refuge, and in Slippery Ann, it's an area within the wildlife refuge, like a parcel of land, where you're not allowed to hunt. Coincidentally, or maybe not coincidentally, lots of elk like to hang out there during the rut. So, if you ever find yourself in eastern Montana and you go to Slippery Ann during the rut, which is also the hunting season, you're almost guaranteed to see elk. We went down there and saw a bunch of elk and it was really cool. And there's an elk report. I think there's a line, and you can ring it, and they tell you how many elk there are.

Aside: Uh, in case you want to put this in your speed dial, the Slippery Ann Elk Viewing Conditions Hotline is 406-535-6904. Nice! Let's get them on the horn, let's get them on the antler. Let's see what they say.

[Alie calls the hotline, the phone rings and a recording answers]

"Thank you for calling the Charles M. Russell National Wildlife Refuge's Slippery Ann Elk Viewing Area Hotline. Today's date is September 1, 2020. There are currently 200-250 *[Alie gasps]* elk in the viewing area. *[Alie says, "Yes!"]* Please remember the elk viewing area is closed to all public entry beyond the road's edge. *[Alie says, "Okay"]* Being too close or disturbing animals can be very unsafe to you and very stressful to wildlife. Use binoculars, spotting scopes, or tele-photo camera lenses to get closer. The Elk Viewing Area Hotline will be updated in the beginning of each week or as numbers change. Thank you so much and have a great day." *[Alie squeals]*

Kirton: But there's definitely some studies and lots of anecdotal evidence that deer learn these things and will behave accordingly to avoid people and being shot, which is really cool. When I lived in British Columbia, we used to see a lot more deer in town during the

hunting season, which of course is just anecdotal, but it fits in with this idea that deer are very good at learning things about people.

Jakopak: They're so smart.

Kirton: So smart!

Alie: That's what I was going to ask. I'm so surprised that they are that smart because I think they have such a reputation for like [*dopey voice*] "Do-do-do... Oh, I'm in a road!"
[*laughter*]

Jakopak: And this is why you shouldn't go up close to them, because they're watching you, they know what you're up to and they're not about it. [*everyone laughs*]

Aside: Okay, so my dad on the family group chat always loves to get critter pictures, and right before I did this interview he mentioned when my sisters sent a deer picture, that deer go into town in hunting season. I was like, "Really?!" and he was like, "Well no, that's just what hunters say when they don't come home with any venison." But it turns out, Grandpod, there's some truth to it! The bucks are like, "Yeah, byeee! I'm heading into town suckers [*laughs, a-he-he-he*]."

Alie: Well, Shirley Dark had this question, a patron, asked: Do deer develop street smarts in suburban areas? I live in Montana and have the cool dudes in my yard all the time. They love my crabapple tree, [*ologists laugh*] but it's not unusual to see deer use crosswalks or to wait for traffic to pass before crossing the street. They don't even seem bothered by people. Are they adapting to city life? And also, should we make sure that they social distance and wear masks also?

Kirton: I don't know about deer specifically, but there is some amount of talk about behavioral syndromes and selection, like in evolution, that the deer that are not particularly road smart or people smart will be killed and then they won't pass on their genes to their offspring. Whereas deer who don't get killed will pass on their genes to their offspring. So, there's probably something in that. I don't know specifically about crosswalks, but there is a lot of info out there about how deer learn and also how we select for specific traits through the way we interact with wildlife and deer.

Aside: Okay, side note: If you were to google 'Do deer use crosswalks?' like I just did, you will find dozens of YouTube videos and morning news segments of deer just chilling at a light, waiting for it to change... just waiting for a break in traffic. Now, as a human person myself, who got mowed down jaywalking at the age of 12, I can confidently say that deer are smarter and more patient than Alie Ward.

Okay, on that topic of city-cervids, a bunch of folks on Patreon, such as Jason Enoch, Topher Henness, Zach Strickland, Nathan Bronec (my cousin), JV Hampton VanSant, Meegan Walker, Kasia Wisniewski, and Karen Blaisdell, all had questions about deer and vehicular interactions. As did, Oryx Beisa, who asked plainly: Why do I hit them so much? And Hannah Black who apologetically submitted the question: Why do deer cross the road? Sorry.

Now, deer car collisions were also on the minds, and apparently the bumpers, of these first-time question-askers Lora, southerner Emilipaige24, and Lauren Ahrenholz, who notes: Growing up in rural Missouri, I've had deer hit *me* while driving.

So, let's ask two Rhiannon cervidologists how to take the BAM! out of Bambi in, yet another first-time question-asker, Monika Kwapisz's words.

Alie: What actually works for preventing hitting deer while driving? I've heard to flash your brights and they'll start moving instead of literally being a deer in the head lights. Why do they stop in headlights? If they were to see a predator, would freezing help them? Is that why they do it? Or is it a myth?

Jakopak: Evolutionarily, these critters are not used to things with big lights coming at them at 70 miles per hour. Every time, I'm like, "Oh my god, deer why are in the road?!" like, oh, they have not had to deal with this until the past 20 years. That's just not fast enough to produce some sort of change. I always try to remind myself that it takes a bit of work. There's been a good amount of research that is emerging, at least in Wyoming, and this is led by Corinna Riginos, who has tried different treatments to reduce collisions with deer at night. One of them being something like having a reduced speed limit. That doesn't really work because people don't follow the speed limit, even at night.

But there was one clever thing that was found accidentally by their research. They were doing an experiment that was looking at reflectors on the side of the road, that when your car hits them it alerts the deer, like, "Oh hey, there's a thing. Don't come here." They were doing a treatment of those and then a control in another area. They left the reflectors in one area normal, and they put white canvas bags over the other ones as a way to cover up the reflectors. And actually the white canvas bags deterred deer better than the reflectors. Potentially, going back to the white-tailed deer butt thing, maybe it looked like a signal from another deer that was like, "Oh, alert! This is a white bag that looks like a deer butt. Do not cross the road here."

So, there are those different fixes that are trying to be experimentally sussed out, and whether they work and to what extent they work, but far and above the best way to reduce deer collisions or just wildlife collisions generally is over- or underpasses. Of course those are super expensive, and they're hard to implement, and you have to maintain them, but they are like 80%-90% (or even higher than that) effective at reducing collisions. So that's not something that an individual can do, but you can support that legislation because it is safer for the wildlife and safer for you.

Kirton: Yeah. Wildlife, underpasses and overpasses are really great. They've done so much great work in Banff Park, there's tons and tons. If you've ever been to Banff, there's a bunch of wildlife overpasses and underpasses, which do amazing things for all the wildlife there. I think part of the whole 'deer in the headlights' thing is, like the other Rhiannon was saying, that they're not used to that level of direct light in their face. It probably actually blinds them temporarily. You know like when you go to the eye doctor and they put drops in your eyes to dilate your eyes? It's probably like that.

So, they literally just are blinded. Try to avoid driving at dusk or dawn, is the best advice if you're wanting to avoid collision with deer. I must shout out to my friend, Anna [ph.]. She used to deer spot for me when we would do field work at nighttime. We'd have to drive at dusk and she would sit in the passenger seat and be like, "A deer! A deer! A deer!" [*clip from The Sound of Music: "Doe, a deer, a female deer"*] [*record scratch*]

Alie: Are they more active in those hours, dusk and dawn?

Kirton: Yeah. Yes.

Jakopak: It's called crepuscular, which is a fun word to say and spell. So yeah, they're most active during dawn and dusk.

Kirton: Definitely avoid those times of day if you can. Sophie Gilbert at the University of Idaho, she does excellent work about deer, and she wrote an excellent paper about costs and benefits of, like, wildlife. One of the things they looked at was reducing the cost of deer in terms of wildlife vehicle collisions. They were like, “Well, you know, if you had more mountain lions, then you would reduce the deer, and you’d have less deer-vehicle collisions.”

Aside: For more on this see Dr. Sophie Gilbert’s paper “Socioeconomic Benefits of Large Carnivore Recolonization Through Reduced Wildlife-Vehicle Collisions,” which also includes two full-color drawings of a deer getting unceremoniously yeeted by, like, a Ford Taurus. [*“Oh, you poor dear!”*]

Now we’re going to take a quick break, and after it you are going to hear the weirdest Patreon question and answer I have maybe ever heard, and it’s been like over 150 episodes. This one got me so good. So stick around, it’s worth it.

First a few words about sponsors who make it possible for us to make a donation in the Rhiannons’ name to a charity of their choosing, which is the Sponsored Membership Fund through the American Society of Mammalogists, which supports ASM membership for mammalogists in developing countries, making mammalogy accessible to as many people as possible. That’s made possible by sponsors whose discounts you’re going to hear about now.

[*Ad Break*]

Okay, get ready. Next Patreon question... Oh my god!

Alie: My wonderful cousin Nathan Bronec asked: What’s up with some deers eating birds? And Charlotte Fjelkegård said: Yep. This. How big a part of their diet is actually carnivorous? [*incredulously*] Do they eat birds?!

Jakopak: [*laughs*] Yeah. So, yes, but not frequently.

Alie: WHAT?!?! [*repeated with warping, “WHAT?!?!”*] Okay, WHY... HOW?

Jakopak: We eat chicken, so why not?

Kirton: It’s probably... I guess it’s not accidental. I guess maybe it’s opportunistic. They’re not, like, seeking out birds. They’re not like, “Hee-hee-hee, I’m going to eat this bird!”

Alie: I just didn’t know that they were even a little bit omnivorous. I thought they were absolutely vegan or die. I had no idea.

Jakopak: Yeah, it’s super rare, but I think people have caught it on camera. If they’re observing bird nests or something, they’ll be like “Oh my gosh, a deer just ate these eggs,” or something along those lines.

Alie: But even if only one deer only ate one bird, and it was like in 1972, I would *still* be freaking out right now. That’s crazy!

[*sound clip from YouTube video: a woman with a southern drawl, “He’s got a bird. On the ground, Michael. He’s got the bird in his mouth. [pause] Oh my goodness, he ate a bird?? Michael, he ate a bird! He ate. a. bird! Did you see that?” Michael: “Yeah.” Woman: “Oh my word!”*]

Okay, so that is an excerpt from YouTuber Linda Lou’s video and it has over 3 million plays because [*imitating the southern drawl from the video*] y’all, it ate a bird!

But Linda and Michael, they're not alone. Ask YouTube to play you videos of deer *eating birds* and you will find more than one, [*YouTube clip, a male voice, also with a southern accent: "That's Opie eatin' a bird."*] which is enough. What?? Who knew??

Deer. Deers knew. This is the dark underbelly of white-tummied, doe-eyed *liars*.

Alie: Okay, along that line, Gabrielle Friesen, first-time question-asker, wants to know: Why are vampire deer like that? Are there vampire deer?

Kirton: There are. That's true. Oh my god, I don't know how to answer this. They're not vampires like vampire bats. They don't suck blood. Their canine teeth are extra long so they look like fangs.

Alie: Oh my God! What do they eat with them, birds? Tons of birds?

Kirton: [*laughs*] I don't think they eat birds.

Aside: Okay, so these are water deer. They're native to China and Korea, and they're similar to a musk deer in that - news to me! - they have giant fangs. Like, deer with Halloween vampire teeth. Like a fuzzy, sweet-faced quokka cosplaying as Lestat. They look like a saber-toothed tiger had an affair with a walrus.

Now, several patrons, including Ashley Burdett, Rot, and first-time question-asker Mercedes Maitland, all wanted to know, as did Laney Wagner, who asked: Why on Earth did evolution make Chinese water deer so metal? As well as:

Alie: Hermietopia, first-time question-asker wants to know: Why do Chinese water deer have tusks? Okay, so, there you go.

Jakopak: They use them to fight with. They don't have antlers; their tusks serve the same function as antlers. They fight other deer with their teeth.

Alie: Okay, so they're mouth weapons. Cool. I'm cool with that.

Kirton: They're mouth weapons instead of head weapons.

Alie: Devon Robertson wants to know: Why do they make that upsetting noise that sounds like a sneeze-scream? Have you ever heard this?

Kirton: Does he mean bugling? Is he talking about elk? So, I must also give a huge shoutout to my friend Kat [ph.], because she is your biggest fan.

Aside: Oh hey, Kat!

Kirton: But, I went to Yellowstone, and I went camping by myself in November. In Yellowstone. It's very cold. If you do that, make sure you prepare accordingly. I never head an elk bugle in person before, and I'm sleeping in my friend's car by myself (thank you to my friend for letting me borrow their car) and I heard this noise. And it's pitch black, and I'm by myself, and I was like, [*crickets outside*] "What is that?" But it was the elk, because the elk hang out in the campsite, and they make this bugling noise and it does kind of sound like a haunting sort of scream. [*clip of an elk bugling, like a high-pitched nasally scream*]
It's kind of eerie if you're by yourself camping in Yellowstone, in the dark.

Aside: Uh, yeah it is. So do they just have the spirit of song within them? Do they need to create art? Are they super pissed? So Rhiannon K. says that the short and long of it is that male elks bugle as a display of dominance, and if another elk bugles in the resident male's patch, he'll come and fight them! So it's kind of like two drunk broskis being like,

“Do you want to go?” but voiced as a high-pitched shriek/wail. And you have weapons, also, jutting from your skull area. Also, you’re horny. Now, do deer display the gift of bugle?

Jakopak: They don’t really bugle, but they do chatter, so they can make little [*makes a sound like a short, angry duck quack*], [*everyone laughs*] that kind of noise. The Wyoming Migration Initiative, which is an organization through the University of Wyoming, has some really cool footage of deer migrating, and the deer are just like [*repeats quack-bleat noise a couple of times*] like they’re talking to each other. They’re very chatty. I don’t know if that’s quite the example of what this listener is asking, but they do communicate. They’re way more vocal than I ever expected. Also, it’s just super delightful to hear them talk. But then also fawns will, kind of, bleat if they’re really stressed out, and that’s more of a [*makes a bleating sound like a sheep in distress*]. [*everyone giggles again*]

Alie: Also, have you considered that maybe they’re just doing duck calls because they’re hungry for birds? Have you thought about that?

Jakopak: [*laughs*] Alie, this is something we should be looking into. Thank you.

Alie: Yep, I’ll see you at the next conference. Brooke Suchy, another first-time question-asker, I love the way this is asked because so many people had the same question, but I find this very charming: Not sure of the name for that crazy deer disease, but how safe is it to eat deer meat? From what Google has told me, every deer has a disease.

So this is Chronic Wasting Disease?

Kirton: Oh... Yes.

Aside: There is nothing cute or charming about this disease, but other patrons such as Zach Strickland, Shirley Dark, Bonnie, and first-time question-askers Stefanie Freele, Sarah Brosier, Justin Andrew, Brittany & David Donnes, also wanted to know about this prion disease, which means it’s a transmissible neurodegenerative disease where one protein causes other proteins to fold abnormally, turning brains into a collection of abnormal cootie catchers.

Kirton: There are other prion diseases like mad cow disease and kuru, which if you ate brains you can get kuru. Then sometimes in people if you get a prion disease, you get Creutzfeldt-Jakob disease. And CWD is really a prevalent topic right now because of its impact on cervid populations, and cervids are so valuable as game species and all sorts of other things. But I would say it’s not every deer that has it. Part of the challenge with CWD eradication is that sometimes deer have it for a long time and they don’t show any symptoms.

Aside: What are these symptoms? They’re things like emaciation, wasting, stumbling, drooping ears, drooling, and boldness around people that seems uncommon. It is 100% fatal in cervids, but it can take years to develop any symptoms, and it is transmitted through the environment, through poops and pees. And it’s spreading quickly in the last decade or so, particularly in captive animals, like on hunting ranches. Now, in captive herds, up to 80% of deer have been found infected, and in the wild in affected areas, maybe one in ten have CWD and it’s rising.

Kirton: It’s not like you can just go hunting and shoot the deer who have CWD because you don’t always know which ones have it. Eventually they will get sick and die, but sometimes you can shoot one if you’re hunting that doesn’t have any symptoms but it is CWD-positive.

So, lots of places now will have programs where you can send off a sample of the deer that you harvest, and they'll test it, and then they'll send you back and say yes or no, and then you'll know if it's safe to eat it or not. I highly recommend, if you're hunting deer, to send it off to get tested before you eat it. We don't know whether it can be transmitted to humans yet, but precautionary principle would suggest that you do not eat it before you find out whether it's positive for CWD. It's a big concern and a big challenge in deer management and lots and lots of people are working on it. Lots of very smart people.

Aside: Now, until they find some kind of cure, epidemiologists can only rely on containment. Is it transmissible to humans? The short answer is, [*makes noises of uncertainty*] we don't know. [*Sorry.*] There have been multiple studies, and some show that primates don't get it, and another study showed it *is* possible for monkeys to pick it up from eating these folded proteins, or prions, in the infected meat - even if it's cooked.

So right now, experts think up to 15,000 animals with CWD are eaten in the US every year and it may be up to ten years before any symptoms show up in humans. So: the CDC strongly urges that hunters do not shoot, handle, or eat meat from deer and elk that look sick, are acting strangely, or are found dead (like roadkill). And if you're a hunter, wear gloves to field dress, try not to handle the brain, spinal cord, or other organs too much, and don't use your kitchen knives out in the field. Also, look into testing kits if you're heading out for some fresh venison, and don't eat any of it until you've gotten the green light back from the test.

I'm sorry, I know it's a bummer. Let's just... you know what? As long as we're here, let's stay sauntering down Bummer Lane as I ask the dark questions. What do they hate about being deer experts AKA cervidologists?

Alie: Is it deer ticks? Is it checking your crevices? Is it e-mail? What's the worst thing about it?

Jakopak: I'm going to answer this as a graduate student and not a cervidologist. Graduate students have been found to have really high rates of anxiety and depression. Some estimates have graduate students as experiencing anxiety and depression at six times the rate that the general population does. So it is this very big issue in graduate school, and I personally really struggled with that during my first year or two of graduate school. I think I'm a pretty energetic and go-getter kind of person, and then suddenly I was just, like, not able to answer e-mails, and I was just laying on the bed not able to do anything. I know that depression and anxiety look different for a lot of people, but that's how it looked for me.

Thankfully, I was able to go to therapy and get a lot of help and I had a phenomenal team around me. My advisor, Dr. Kevin Monteith, is a super great human being and advisor and was there for me through all of it. I have a super supportive lab, and one person in particular, Tayler LaSharr, who runs the project that I am also working on, she was instrumental in my support through that. So I was very lucky to have all of these support systems, which was great, and I was able to work through a lot of those issues.

With anxiety and depression it's not a thing where you're like, "Okay! It's done now," but it's an ongoing thing. I've been able to get to a much better spot. But even though so many graduate students are struggling with these things, there's not institutional-level support for the amount of resources that graduate students need. Counseling centers and student health centers are great and integral parts of a campus, but when you have thousands of graduate students - like the University of Wyoming has, I think, 2,000

graduate students - it gets really hard to have a counseling center can support that many graduate students.

So, I think there are issues within graduate school that are very challenging, and there's not always good ways to ameliorate those. But like I said, if you can surround yourself with great people, which thankfully I've been able to do, hopefully you can get through that if you're also struggling with that sort of thing.

Alie: This is a huge question, but is there one self-care or mental health tip that you wish you had known earlier? Like, did you end up taking up meditation or a different bedtime routine? I'm asking 100% for myself. Anything that really helped you navigate some of that anxiety?

Jakopak: Maybe two things. One is my dogs. Everyone should get dogs (as long as you're a dog person). If you're not a dog person, don't get a dog.

Alie: No! Every. Single. Person. Whether you're allergic or not! Should get a dog! *[laughs]*

Jakopak: *[laughs]* They are so great. I have two dogs and they just make my life so much better. Even when I'm feeling really crappy and I don't want to go outside, they're like, "No, I need a walk. You have to take me outside." Then I go outside and there are birds around, and there's plants, or a squirrel to watch. There's so much cool stuff outside. And then you get to funnel all of your love into these beings, and they just love you unconditionally. No matter how dumb you sounded in class, or that you can't get your statistical analyses to run, or that you don't understand that paper. Having that has been really helpful.

But then also I have been trying to cultivate an art practice, and I'm not super good at making an actual practice but I've been able to think through my scientific problems with art, which has been really helpful. Having that different perspective, and then learning new skills that put me out of that comfort zone, and then distract me... like, disrupt that cycle of thinking you're not good enough, to put you in the right frame of mind. Then you're like "Okay, yeah! Let me learn this new thing." Thankfully, I have an advisor who is super supportive of that.

There was one time where I told him, "I cannot work right now. I feel like I can't work. I can't focus on anything. I just sit at the computer and have no motivation, no energy, no interest." And he's like, "Well, what *are* you interested in?" And I said, "Well, I'd like to draw right now." He's like, "Okay, just go and draw for a little bit and then draw until you get back into it." So I would do that. I would switch my focus from something that's really stressful to this thing that brings me joy, and I was still thinking about science, but just in a very different way, and then I would bring it back to science. Then I'd be back to being able to read papers, and to think about analysis, and that sort of thing.

Alie: Oh my god, that's making me cry right now! That's amazing! *[Alie and Jakopak laugh]*

Jakopak: Graduate school is really hard, but I hope everyone can have a really good group around them. The relationship that you have with your advisor and with your lab mates is so... at least for me, it was so, so important. And that won't be the case for everybody, but it really was for me. So I hope that everyone can find the advisor that they feel comfortable with telling what their needs are, and an advisor that is receptive to that, and a lab group that will be super supportive, and wonderful, and great. And I love all of them!

Alie: And treat you like a human being instead of a machine. Yeah.

Jakopak: Yeah. What a novel idea! *[both Rhiannons laugh]*

Alie: Can you believe it? Crazy. Crazy how that makes you feel better!

Kirton: I feel bad for laughing.

Alie: No, no, a hundred percent! I'm literally laughing. I'm crying and laughing right now.

Aside: A novel approach for academia is treating human beings as if they were human beings. I like it. Now, what about Rhiannon K.? What does she haaaaate?

Kirton: *[laughs]* There's some really interesting discourse in the hunting community. I am not personally a hunter because hunting in the UK is not like it is in North America. North Americans are very lucky to be able to hunt in the way that they do and to have access to public lands in the way that they do, although I completely recognize that public lands have a really troubling history with colonization and stealing land from Indigenous people. Conservation has so many problems with colonization. I'd say, specific to deer, some parts of the hunting community can be very frustrating.

Aside: What does that meeeean exactly?

Kirton: I would love to hunt. I think hunting's great. I think it's really a sustainable way to get your meat. I'm a vegetarian largely because I try to avoid animal meat, unless I can... We have a local bison farm and sometimes I buy bison meat from them at the local market. I just find it such a challenge to find out where your meat comes from and how the animals were treated. So I fully, fully support if you can buy your beef from a local farmer, do it. It's a better deal for you. It's a better deal for the cow. It's a better deal for the farmer. They don't get screwed over by, like grocery chains.

Sometimes, as a scientist, it's really frustrating, the lack of scientific literacy in the general population, especially regarding wildlife, and safety around wildlife, and what's actually dangerous. The way people perceive risk when it comes to wildlife is just wildly inaccurate. You're probably more likely to be killed driving your car than you are by a bear. Or, by the same count, people are like, "Oh, well, look at this cute little Bambi over here! I'm just going to go touch it." And then the deer beats them. Yeah, I think generally in science, that's the most frustrating thing for me as a person who studies the intersection of hunting and deer.

I read a hunting blog once - I can't remember which one - and it was like, "Five Things to Know About Hunting Deer in North America." And the first one was like, "We must hunt deer because they're so overabundant, so we have to keep their numbers down, so they don't damage stuff." And then two points later it was like, "We must kill predators so that they don't decimate deer populations." Didn't you just say that deer were overabundant?? But it's part of a larger thing, I think, of the way that we in the Western world think about wildlife and wildlife management systems. I feel like I could go off on a tangent here, so I'm going to stop myself, but there you go.

Alie: That is so valid. That's super valid the way that animals are politicized and activities are politicized is really sometimes nonsensical.

Kirton: *[heavy sigh]* It makes me want to throw my phone... at people. *[laughs]*

Alie: I know. Just don't throw it at a deer. Just don't throw it a deer!

Kirton: I would never do that!

Alie: You would never do that. No, I know. And it's really interesting too, because I think that, especially in the US, we equate second amendment stuff with being super politicized. And then there's also people who are conservationists and who are maybe more left-leaning who care about where their meat comes from and care about animals' experience. So I think that there's probably more of a Venn diagram when it comes to hunting and conservation than is realized, but it's very much like, "I'm *this* kind of person and you're *that* kind of person."

Kirton: Yeah. For sure.

Aside: My boyfriend Jarrett—my very, very, leftist, right-hand manfriend, we've known each other for nine years and we met because he used to be a butcher. Our very first interaction was me walking into an artisanal nose-to-tail boutique meat shop called Lindy & Grundy. And there was this sparkly-eyed hunk wearing a chainmail apron who made a shameless pun about tools or something and I was like, "Oh no. I'm doomed!"

Anyway, fast forward from the butcher shop and we both try to avoid meat now, and factory farming in particular, and really struggle with that. And Jarrett is starting to lean toward the notion that if he's going to eat meat at all, he should know its origin and that the animal suffered minimally and that nothing will be wasted. Wait, so I would be dating, a hunter dude? Will he use a bow and arrow? An atlatl? Or guns? Is he going to start wearing camo hoodies? Can he be both a bleeding-heart leftist and a hunter?

Kirton: I'm totally with him. My sister, she's in England, and she is my twin. Oh, full disclosure, she is the complete opposite of me as human being. [*Alie chuckles*] I was talking to her the other day about hunting and I was like, "Yeah, yeah, I wish I could hunt here, but I can't because I'm not a resident, blah, blah, blah." And she was like, "Really? I thought you would not like hunting because you're a vegetarian." And I was like, "Yeah, but hunting is way more ethical than buying cheap, gross beef that's mass-produced from the grocery store and the farmer gets a bad deal."

Alie: Yeah. I think these kinds of conversations are so important because a lot of people, just because it's so politicized would be like, "If you hunt deer, you love things being dead and you like guns." Instead of being like, "You hate factory farming."

Kirton: And that's something that I think is so important, is to listen to perspectives that are not yours and reach across the aisle, or whatever y'all call it down there.

Aside: What does Rhiannon J. think about hunting? Is she appalled by all of this?

Jakopak: I had been a vegetarian for almost all of high school and a good chunk of my undergrad. Then basically, because I was lazy, I started eating meat again and had back and forth between being vegetarian and not. Then last year I hunted for the first time. I went from never ever thinking of being able to kill any animal, to hunting a pronghorn and a white-tailed deer in the fall.

Kirton: See?

Jakopak: I mean, if you see me, I have my septum pierced. and I'm wearing Chacos. [*Alie and Kirton laugh*] I drive a Subaru, right? I look super hippy-dippy. I normally haven't showered in a while. So, I'm maybe not who you would expect... I'm not a super strong gun rights advocate.

But I think that, at least in Wyoming, which is where I've spent a lot of my adult life, there's a really strong conservation ethic and an atmosphere of hunting as an important

part of the culture. So that has been very interesting to experience. And I'm still honestly trying to suss out all of my feelings about it. I'm not 100% okay with the notion of killing an animal, but I do enjoy having protein that is ethically produced and harvested, and I know where it was, and I know what it took to kill that animal. I think there are a lot of really good organizations out there that, if you are interested in hunting, you can check out. Alie, if your boyfriend wants to hunt, we're going to hunt this fall. He's totally welcome, and I totally mean that!

Kirton: I wanna come!

Alie: Oh my god. Seriously, we're... Bags packed. Literally, we will come out there.

Jakopak: Do it! Please do it!

Kirton: [*sadly*] The border is closed.

Jakopak: Yeah. That's true, from COVID.

Alie: Dammit! We'll get rid of COVID. And then in the fall...

Jakopak: I think it's really important, if hunting is something that you're interested in, to think about it and to have these conversations. Because if you told a 15-year-old Rhiannon that she would kill two things and then eat them, she would be like, "There's no way!" Like I say, I'm still struggling with it, but I think these are important conversations to have with yourself, and with your friends, and in the broader conservation and wildlife management community.

Kirton: And I think also, I'm from England and I don't want to say people don't hunt in England, but it's not common. In Montana, everyone hunts. My friend's dad, he is a Bernie Sanders supporter, and he hunts elk. That is just the way of life there. It's not politically divided, it's just what everyone does. And I think sometimes when we live in urban settings, we don't have exposure to that.

Alie: I think that's such an important duality to be able to hold, to understand the nuances of that experience for the animal, for sure.

Aside: So, its complex. In England, for example, a lot of open areas might be privately owned by barons and kings and stuff. Here in the US, we have sprawling, gorgeous, public lands on which to hunt, but those lands were stolen from Indigenous folks, who hunted as a traditional, practical, and spiritual practice from which our modern ways of McNuggets are far removed, much to the environment's detriment. Americans probably have more overlapping interests than we realize but our weird two-party system is polarizing and stark, and our elected representatives exploit divisions and carve them even deeper. In a few weeks, there's going to be an episode about the sociology of voting. I can't frickin' wait!

I dunno, I don't have an answer for all this. Maybe it *is* hunting with atlatls from the Experimental Archeology episode. Which, by the way, if you would like to learn how to make some, *the* Angelo Robledo is holding a free 3-hour workshop, just for fun, on September 20th via Zoom, and I'll put a link to that in the show notes if you want to sign up. Okay let's look at happier stuff:

Alie: Oh, and then of course, favorite thing about deer or what you do? I know it's going to be hard, but favorite thing about what you do.

Kirton: You can go first. [*Alie laughs*]

Jakopak: Okay. I really, really love that we are still getting outsmarted by these animals that we think we know. These are charismatic megafauna. They get a ton of funding for research. We care about them; they are in the news. We've studied them for decades in depth, and there are still these weird, baffling things about them. I really love that I can be talking with my lab mate, Tayler LaSharr, who again, runs the project that I'm working on. And she'll show me a plot that she's just made, and it's like, "Oh my gosh! These deer are doing something that we never would have thought of!" They just continually surprise me, and I think that's really amazing.

Alie: Oh, that's great. Yeah. I wouldn't have known exactly how cunning they are. I think that's so interesting. Or about the birds!

Aside: Somewhere out there, there's a deer crunching a bird in its mouth like a fried wonton. Just loving it.

Jakopak: They're just so unexpectedly smart, wonderful... And maybe unexpectedly isn't the right word, but we see that they're just all over. So you can kind of take them for granted sometimes, but they are truly remarkable critters.

Aside: And Rhiannon K.?

Kirton: Okay I'm going to say two favorite things. One of my favorite things about deer, I guess, and hunting deer, I suppose, is that all of my friends who hunt seem to have this real sense of community amongst themselves. I think it's really great that hunting can bring people together, and people who wouldn't necessarily otherwise share interests, they can learn from each other, and be outside in nature and that sort of thing. My other favorite thing is just how much we can learn about the world through deer. It sounds like a really funny thing to say, but, they're kind of this central species or a central group that have impacts on so many other parts of the system they're in.

But I guess one of the things I would love to see more of would be more Black and minority hunters and anglers, because I think that hunting has this really white image. I know that there is the National Brotherhood of Hunters in the States and they're all Black hunters, but I think it would be really amazing for Black communities to be able to connect with the land in this way.

There's this idea that Black communities only exist in urban spaces, which is not really true. I just learned a few weeks ago that there was historically a lot of Black families in the Canadian prairies, way back when. And it's kind of just been this erasure of Black people in rural spaces and also violence in the US in rural spaces for Black people. But the first person to bring cattle to Alberta, which when you think about this today is mind-blowing, was a man called John Ware and he was a Black cowboy. So you think about Alberta, and what you think of when you think of Alberta...

Alie: The whitest of the whitest whites. [*Kirton laughs*] I feel like Alberta means 'white'.

Kirton: And then you learn about John Ware, and Alberta wouldn't even be Alberta without this Black man who started it all. But how many people could you go and ask about who John Ware was, and would they know? Probably not many.

Aside: If you're like, "I would like to know more about this badass cowboy, a formerly enslaved man who left the Carolinas and became a cattle driver through Montana and into what is now Calgary, establishing his own ranch, and becoming a prominent Canadian businessman." Well cow-boy-howdy! May I suggest the brand new 2020

children's book release, *Howdy, I'm John Ware*, which is by Ayesha Clough, with illustrations by Hugh Rookwood? Yes, there is a link in the show notes. It seems like a great book. Could it be more timely? No, it couldn't.

Kirton: Black people do have this connection to the land, and to farming, and to ranching, and all sorts of other things that's kind of been erased over time. So I really wish that we had that back and we could kind of rebuild that narrative and open these spaces to Black people.

Part of what the other Rhiannon was talking about, being first generation or being from a background that is not affluent, you often don't have the same access to these outdoor spaces and these outdoor activities as people who do come from more affluent backgrounds, which is not necessarily true of hunting. I know lots of people who are not affluent who hunt, but I definitely think in terms of the media narrative about hunting, it's very white. And I would definitely like to see that change.

Alie: Yeah, for sure. I mean, it's funny because I feel like even when you see a certain kind of camouflage print, you associate it with a political party, which is like, "Whu??" It's so weird. [Kirton and Jakopak laugh and agree] So I completely agree. And I think it's such an interesting conversation and I think you both are so the people to open up that conversation, open up people's minds to that.

So ask smart Rhiannons stupid questions because they're full of answers, and they're wonderful, and life is short, and the world is beautiful, and nature is complicated. Also get excited for Black Mammalogists Week starting September 13th! You can find out more about the programming for that at BlackMammalogists.com.

You can follow the Rhiannons on Twitter and Instagram. There are links to their pages in the show notes. More links will be up at AlieWard.com/Ologies/Cervidology. There's a link to the [Sponsored Membership Fund](#) through the American Society of Mammalogists, where we sent a donation this week and last. Also follow *Ologies* on [Twitter](#) and [Instagram](#) @Ologies. I myself am [@AlieWard](#) on [both](#). Definitely follow both accounts and @Chacos because this week we're going to give away a free pair. Hell yes! Chacos, is not paying me to publicly stan them this hard, but I hope they pony up some sandals for both Rhiannons like they did for Pelicanologist Juita Martinez. Yes Chacos? Hmmmmm... no pressure!

Okay, if you want *Ologies* merch, it's at OlogiesMerch.com. Thank you, Shannon Feltus and Boni Dutch of the comedy podcast *You Are That* for managing merch. They are also hilarious and you can check out their podcast. Thank you, Erin Talbert for being the best admin ever to the [Ologies Podcast Facebook Group](#). Thank you, to professional transcriber Emily White and the gaggle of very generous Ologites who get these free transcripts available for Deaf and hard-of-hearing science lovers. Those transcripts are up for anyone at AlieWard.com/Ologies-Extras. There are also bleeped episodes done by Caleb Patton if you have kiddos.

Thank you, to Noel Dilworth who helps schedule the Ologists, and to Jarrett Sleeper, aka the butcher in my phone for several years, of MindJam Media for editing these episodes alongside the deer, deer Steven Ray Morris who just launched his back-to-school series of paleo guests on his own podcast *See Jurassic Right*. The theme music was written by Nick Thorburn.

And if you stick around until the end of the episode you know I tell you a secret and, if you watched an Instagram live video I did a few weeks ago, I received Gizmolgist Simone Giertz's Every Day Calendar. It's this sleek, illuminated, electronic board. It has these beautiful golden lights that you

can press to turn on for every day of the year. She made it because it helped her stay on track meditating, so she did a Kickstarter, and I bought one, and it came. I'm so excited, and my aim with it is to use it as an incentive to go to bed every night with the lights off, and Invisalign in, on purpose.

Y'all, it's working. And it's turning me into a morning person. Last night I went to bed at 10pm and got up at 5:30, excited for the day. I sprung out of bed ready to kick ass . So, having the accountability of having to press this light and also probably because it was made by a good friend of mine who has the best intentions of anyone I've ever met, I'm like, "Gotta do it. I gotta press this button to make the light go on!" So far, it's working. Stay tuned! We'll see how it goes, but this is an important development in Alie Ward's self-care and energy management. I mean, seeing the sun come up with a coffee feels so much better than waking up on the couch with a bra. Who knew??

Okay, take care of yourselves and each other. You're great. Okay. Berbye.

Transcribed by:

Anna Murray

Kadi Eubanks

Emily Hillard

Wendy Fick

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