

Pinnipedology with Luis A. Hückstädt

Ologies Podcast

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Oh heeey, it's the first three alarms that you turned off in your sleep. It's Alie Ward, *Ologies*; we're doing it! Pinnipedology! Frickin' seals, sea lions, walrus dongs . Let's talk.

First, though, thank you to patrons at [Patreon.com/Ologies](https://www.patreon.com/Ologies) for submitting questions. It costs just a buck a month to join that club. Come on over! Also thank you to anyone who has hit subscribe, or who's told a friend, texted, tweeted, left reviews. I read all your reviews like a gentle creep, and this week's fresh review is from someone named Emmmmmmfox, who says:

Ologies is a life-changingly good podcast. Did I get a snail tattoo after listening to the Malacology episode? Yes.

As your Internet Dad, I approve. Also, congrats to AHopefulScientist for heading back to school to get a PhD. Hell yeah! Go get it.

Okay, Pinnipedology. It comes from the Latin for 'having fins for feet', and it wasn't until, maybe, 15 minutes ago that I knew that it wasn't related to 'pinna', meaning 'ear', even though ears play a very important role in triumphantly explaining the difference between a seal and a sea lion. More on that later.

But this ologist studied marine biology for his bachelor's, got a Master's in Oceanography in Chile, and a PhD in Ocean Studies from UC Santa Cruz, and is now an Assistant Researcher at the Institute of Marine Sciences at the University of California Santa Cruz. And, *and*, an adjunct professor at the University of North Carolina Wilmington.

He's studied marine mammals for years and years, and his name comes up in over 100 published papers on seals and sea lions. I have had him on my sonar for at least six months. I was so excited to talk to him. And after his land seal – aka his dog – went for a potty outside, we met up, we hopped on the horn. I asked him about everything from blubber to ocean currents, psychedelic teeth, receding ice, whisker technology, belly scooting, snoot boops, octopus smacking, walrus tusks and other bony structures. Antarctic expeditions, butt nubbins, and more, with world explorer, sea mammal enthusiast, marine ecologist, seal and sea lion physiologist, and Pinnipedologist, Dr. Luis Hückstädt.

Luis Hückstädt: My name is Luis Hückstädt and my pronouns are he/him. And *el*, I guess, since I'm Chilean.

Alie Ward: *[laughs]* Good to know! Oh, that's right. *El!* Now, where are you right now? Where in the world are you?

Luis: I'm in Wilmington, North Carolina.

Alie: Which is not Chile.

Luis: It's not Chile. I've been living in the States for the last 16 years almost.

Alie: Oh you have? And what are you doing in Wilmington?

Luis: Right now I'm a visiting researcher. I got a fellowship to come here for a semester and I've been working here giving a grad student class and doing research with a couple of collaborators here at UNCW.

Aside: What do I always say? Ask smart people not-smart questions.

Alie: Are there seals in North Carolina?

Luis: No, there's not. There's no seals here.

Alie: [laughs] Okay. I wasn't sure.

Luis: It looks like every now and then they get some random, stranded seals that come this far down from the Arctic, but they don't live here.

Alie: Okay, I wasn't sure. Actually, this brings us to a great question: What is a seal? What is a seal; what is a pinniped?

Luis: So, a pinniped is a suborder. If you know something about how animals are put into categories, there's the class Mammalia, so all mammals, basically, are together. Within that class there are orders, right? So, the subcategories would be mammals. And one of the main ones is carnivores. Pinnipeds are related to bears, and dogs, and cats, and all that. But it's sort of like the aquatic branch of those guys.

Alie: Got it. Seals are carnivores?

Luis: Yes, seals are carnivores. They're together with... The closest relative on land would be bears.

Alie: [gasp!] What?!

Luis: They come from that brand of animals, basically. So, they're related to cats, and dogs, and bears, and otters, and all those guys.

Alie: The otters, I'm totally like, "Yeah, of course." But the bears? That's really flipping my shit right now! [laughs]

Luis: Yeah, bears and pinnipeds share a common ancestor.

Alie: Okay, and bears have cute tiny little ears. Seals, and sea lions, and walruses... cute tiny little ears also?

Luis: No. Just sea lions. So, sea lions actually includes sea lions and fur seals, and those guys have external ears, what we call the pinna. True seals, those guys don't have an external ear like our ear that we can see, but they do have, of course, everything internal. They can hear you.

Alie: So don't talk smack about them.

Luis: Exactly.

Alie: Can you list off for me, what are pinnipeds?

Luis: Yes, so there's three families within the pinnipeds. The first one is the walrus, which is just that species. [*"I am the walrus."*] The other ones are the true seals, and their family includes sea lions and fur seals.

Alie: Got it. And elephant seals are included in that?

Luis: Yeah, elephant seals are true seals. Elephant seals, actually, are the biggest of the seals.

Alie: Ah! So huge. So giant.

Luis: Yeah, they're massive.

Aside: Okay, so families of pinnipeds include the walrus. There's just one species of walrus: the walrus. Then there are some fake-ass – just kidding, they're not fake. They're just not true seals – called Otariidae. And these are seals with ears, and sea lions, and fur seals. And then

there are the true seals, which are earless, sort of. Earlobeless. There are 33 species of pinnipeds total, all of which you want to stare lovingly at.

Alie: And what's their range? Where do pinnipeds live? When did they, like, waddle off of land and start bobbing around in the water?

Luis: So, they're pretty much everywhere. They tend to hang out more in colder environments. So you have the high diversity of seals in the Arctic and Antarctic, but there's pinnipeds at the equator. There's sea lions and fur seals that live in the Galapagos Islands. But most of them actually do live, instead of colder environments, colder waters.

So, the West Coast of North America is where the ancestor of the seals recolonized water around, I think, the area of British Columbia, about 25 million years ago. It was about the size of a sea otter. It's called *Puijila*, and that's the first ancestor of a seal. And then along the coastline of Northern California, Oregon, that's where we see the first fossil of a real pinniped.

Aside: So the ancestors of modern seals and sea lions slipped off the terrain of Earth and back into the water off the coast of the Pacific Northwest, they think.

Alie: That makes me feel so, like, homesick and validated. Because I'm from the Bay Area where the waters... Like, you go to the beach in the Bay Area, and you go out there with a windbreaker, and you're like, "Ah... It's nice. Let's get back in the car." The Pacific is so cold, and people obviously don't think about that when they think about California. So, why do scientists think they evolved to dig colder waters?

Luis: It's partly related to the fact that colder waters are more productive, biologically.

Aside: What does "more productive biologically" mean, exactly?

Luis: So, because they're more productive, there's more food. And these animals, they're big animals. They also have high metabolic rates because they're mammals, right? So they have to keep a constant temperature, so they eat a lot of food. In order to support their populations, they need a lot of food. And the environments where you have a lot of food in the ocean tend to be the colder waters; upwelling areas like the California current, or colder waters in the Arctic or Antarctic.

Aside: So he says that the Humboldt Current and South American currents bring Antarctic water to the coast of Chile and Peru, bringing a pretty sweet ecosystem for seals.

Alie: How cold are the waters off of Chile, and at what point did you set your sights on seals, or walrus, or elephant seals, or sea lions, or fur seals, or leopard seals, and say, "Hot dang! Those things are cool!"?

Luis: [laughs] So... Let me think about this. First of all, Chile's sort of the mirror image of California. Imagine putting a mirror on the equator. Chile fits the exact same opposite of the California Current System, so we have very similar water temperatures, similar kind of environments, etc. So, that sort of explains why there are so many pinnipeds in Chile. Well, there's not that many species, but there's a lot of individuals.

However, my story's a little bit more convoluted than that because I was actually born and raised in Venezuela. Not in Chile, but to Chilean parents. And ever since I was a little kid, I was about nine or ten, I wanted to be a marine biologist and I wanted to study marine mammals. It has to do with the fact that I grew up in the '80s and I remember the commercials of Sea World where they'd have Shamu flying among clouds [clip from SeaWorld commercial: "Come

see our new baby, Shamu.”] and the sea lion playing with the ball. As a kid, I saw that and I was mesmerized by marine mammals and I wanted to just do that.

So by the time my parents decided to move back to Chile, I was 16 years old. And one of the arguments that they used to convince me to move was that there’s marine mammals in Chile.

Alie: Oh my god. *[laughs]*

Luis: So I decided... Even though I was a 16-year-old. I of course didn’t want to move to a new country when I was a teenager. They told me that and, yeah, automatically I was like, “Yeah, I’ll move to Chile.” Ever since I was ten years old, something like that, I knew I wanted to work with marine mammals. So that’s basically how I ended up choosing this career.

Alie: That’s amazing. Essentially, the pinnipeds *sealed* the deal. *[“Wow. That’s awful.”]*

Luis: Exactly. *[laughs]*

Alie: So sorry. *[laughs]* And what’s your take now on aquaria that have marine mammals versus being a marine mammal biologist and a pinnipedologist? At what point in your studies did you decide, “I want to study wild animals rather than work with them in captivity?”

Luis: Well, I think that most of us who work with marine mammals, we want to work with them in the wild, that’s the ideal. But we also acknowledge that it’s impossible to know a lot of things about these animals unless we have them in a controlled environment. We have to do a lot of experiments with these animals, we have to come up with protocols to then apply to wild animals.

So, even though I know that it’s a hot topic and a lot of people are against that, particularly because they’re marine mammals and people think they’re charismatic, and they’re fluffy, and they want to hug them, right? A lot of people are against captivity, however, in the community of scientists that work with marine mammals, we do acknowledge that there’s a benefit, there’s a plus side, to having animals in captivity.

Aside: Luis says that in order to help wild populations, it’s necessary for the mammal scientists who devote their lives to them to be able to study these critters in a controlled environment; to know what their blood volume is, and their chemistry with certain diets, etc. But all of that depends largely on the conditions that they’re kept under.

Luis: So you have to be very conscientious about the ethics of the aquaria, for example, that you’re working with, making sure there’s enough space, etc. And there’s also the fact that a lot of these animals have lived in captivity for generations. You cannot just bring them back into the wild and release them. That’s impossible. Ideally, in my mind, I wouldn’t have animals in captivity, but I acknowledge that they have a huge potential.

Alie: Tell me a little bit about what your life as a pinnipedologist looks like. How often are you on expeditions, versus being, say, in North Carolina where you might be looking at data more or animals in captivity? Like, how many parkas do you own? *[laughs]* Does your work smell like fish? Tell me about it.

Luis: So, it depends. I’ve been very lucky. Ever since I was a grad student, a PhD... I came to UC Santa Cruz in California to do my PhD in the Costa Lab with Dan Costa, which is one of the biggest names in marine mammal research in the world.

Aside: That’s right, it’s the Costa Lab. Not the Coastal Lab. It’s Dan Costa – whose last name means... coast – and is one of the world’s leading researchers in... coastal animals. And I looked him up, and in one photo online Dan Costa is, kind of, kneeling on a field of ice and he’s

wearing one of those big red parkas that people in the Antarctic wear. And his salt-and-pepper beard is just level with a seal sporting a six-inch head antenna, kind of like a modest narwhal. Anyway, Luis worked in the Costa Lab and got lucky.

Luis: He had this project and he didn't have any students working on it, so he offered it to me and I was like, "Of course I'll work with animals in Antarctica," because not only do I get to go to Antarctica, I get to go to Antarctica through Chile, so it's a free ticket home. ["Noice!"] But also I've been very lucky in the fact that I've been invited to work all over the place. I've worked in California... There's a small colony of elephant seals, it's about 30 minutes north of Santa Cruz in California, and that's where we do a lot of the research with northern elephant seals.

Aside: He's worked in Mexico and California with California sea lions, which can measure up to nine feet long, weighing 800 pounds. And remember, they're the ones with the little, tiny earsies. And he's worked in the Galapagos with the endangered Galapagos sea lions and fur seals. He's worked in Uruguay and Chile with South American sea lions. The dude has had adventures!

Anywhere else notable? Yeah.

Luis: And I've been to Antarctica about ten times working with southern elephant seals, crabeater seals, Antarctic fur seals, leopard seals...

Alie: Ooh! And when you're doing the work, what are you doing? Are you hiding out in a tent and recording every move? Are you hugging them? Are you taking blood samples? What does that fieldwork look like?

Luis: A lot of that. So, it depends on where you are. So, I've never actually had the experience of, like, a hardcore biologist that lives in a tent for weeks at a time. I've done that for, like, two weeks, and that's it. I go to more, sort of, spoiled campsites and field sites. So, the "worst" condition, when I was working on my dissertation, I went to work with southern elephant seals and we have a camp... well, NOAA has a camp where we were staying, but they have absolutely everything there. The only thing they didn't have is, basically, internet. But you have a satellite phone, you have a generator for electricity, you have a cabin, you have a bed. There's nothing bad. You have a shower, even. ["Oooh! Fancy!"]

Aside: And when Luis says the NOAA camp, he doesn't mean rustic bunkers with his friend Noah. NOAA is the National Oceanic and Atmospheric Administration, which is a United States scientific agency within the Department of Commerce. And their field lodgings... more like summer camp housing from what I gather. And life as a seal researcher ranges from that all the way up to the McMurdo research station in Antarctica, which by comparison, is pretty flush.

Luis: ... where you have three bars, you have ATMs, you have wifi, a coffee shop. You're super spoiled there. So, those have been my experiences in the field.

Alie: Is there a type of fieldwork that you really love doing? How close to the pinnipeds do you get to be?

Luis: Yeah, that's a good thing because I didn't finish... I forgot about the second part of your previous question. I work with animals... I define myself as an ecologist, but I also do a little bit of physiology, looking into how the animals feed within their ecosystem and how they operate. And in order for us to do that, I basically use two different methodologies. One of them is what we call biologging, which means putting tags on animals. Any instrument you

can put on an animal to measure things like where they go, how deep they dive, how fast they move. And things about their body, for example their temperature, etc. So, I use a lot of that.

Aside: Okay, this biologging equipment. Remember the seal hat with the antenna? It's like that, or tagging, or collars, and it helps pinnipedologists figure out where these animals are headed and how they eat so they can make sure to protect their food sources, and thus, them. And right on cue, by the way, Luis's dog demonstrated a blinged-out mammal by shaking her own collar. [*clip of Luis talking and dog tags rattling*] So yeah, kind of like that.

Researchers like Luis will also take blood samples to figure out what seals eat because when a pinniped is half a kilometer underwater it's kind of hard to see what they're munching on. So to analyze this, pinnipedologists use stable isotopes, which are non-radioactive forms of nucleotides that don't spontaneously undergo radioactive decay. They're stable.

Luis: Basically, they're markers that tell me something about their diet, where they go, etc., so I can measure that on their tissues, their blood, their fur, their whiskers, etc. So I can collect those samples from those animals when they're under anesthesia. We can glue the instruments on them, and then let them go and do their thing, and then we retrieve the information later.

Alie: So you get to straight-up touch seals under permitted conditions.

Luis: Under a lot of permits. Yeah.

Alie: So many questions about getting to touch a seal, which 99.9% of people will not get to do, but 100% of people want to do.

Luis: Yeah.

Alie: Are they silky? Are they soft? Is it like petting a chocolate Labrador? Or is it more like a cat? And are they muscley, or are they blub-blub-blub? Like blubbery? What's the texture of a seal? [*Moirra Rose: "Tell me everything."*]

Luis: It depends on the species. Have you ever petted a Great Dane?

Alie: Yes!

Luis: So, that's sort of what it feels like.

Alie: Okay! [*squeals a little bit*]

Luis: For a true seal. True seals, they're not very furry. They don't have the nice underfur like the fur seals. They just have, sort of, the guard hair. So their hair is more rigid; it's kind of coarse. So, they're not very fluffy when you touch them. They feel very muscley. They actually... When you're touching them, you're basically touching the skin that lies over the blubber, and the blubber is not... blubbery. It's like Jell-O. It's actually sort of rigid. So, they're like compact little balls of fat.

Alie: [*giggling*] Aww!! What's the difference between blubber and fat?

Luis: Blubber is more of a complicated fat that has an added structure to it. So, it has some proteins in there that makes the fat a little bit more rigid. If you're moving through the water, it's good to make sure that you are as tight as possible because anything you have that moves with you, that wiggles, you're basically adding drag, and that's bad when you're moving through the water. For example, the shape of a dolphin. It's that perfect, torpedo-like shape, right? With very tight skin, and they also have a layer of blubber.

So, that's the ideal shape that all these animals should converge towards. So, a seal is sort of getting to that direction. It hasn't quite gotten there yet. They're not blubbery. They're not

Jell-O-ey. They're not wiggly. They're tight. Tight skin. It's like you putting yourself in a wetsuit.

Aside: Why is Luis comparing them to dolphins, like dolphins are the cheerleader stepsister and pinnipeds are a girl in a teen rom-com who's beautiful but just still wearing glasses? Well, cetaceans, he says, have just had more time evolving in the water. Now, pinnipeds, despite being shaped like the world's most ambitious blunt, and having feet that look like tube socks are falling off, they still kill it in the face area.

Alie: And their huge, beautiful, blinking eyes with eyelashes. Is there a reason that they are so cute? What evolutionary purpose do those serve other than being adorable?

Luis: So, humans somehow are tuned to find things that have big eyes as adorable. But that's not the reason why their eyes are so big. Think about when these animals are eating, when they're finding prey, they're doing this in the deep ocean, and there's virtually no light in the deep ocean. So you want to maximize your chance of finding food, especially if you're trying to go for these bioluminescent prey, you've got to have big eyes so you can catch every tiny little bit of light possible. So that's the reason why they have such big eyes. Because they basically are diving, trying to find food in the twilight zone. There's no light there.

Alie: And then what happens when they're just basking on the beach? How come all of that blubber doesn't make them overheat, or all of that light doesn't make them want to dive into a cave, which is what I want to do sometimes on the beach without sunglasses?

Luis: It does, actually. So, when you see them on land, when they're basking, they probably are cold after they were diving for a whole night or even longer than that. So they might be just warming up a little bit. But when it gets too hot, they have to get in the water again. So, right now for example, if you go to the Channel Islands in California...

Aside: The Channel Islands are off the coast of Santa Barbara and are home to a staggering array of pinnipeds, including California sea lions, and harbor seals, northern elephant seals, northern fur seals, rare Guadalupe fur seals, and even more rare, Steller sea lions. What?! Really?! Just hiding off the coast of Oprah's house, truly living their best lives.

Now, a few hours north of that, near San Luis Obispo, lies a colony of around 17,000 elephant seals. Now, this rookery of breeding pinnipeds, it's free to look at, it's open year-round. You don't need reservations. It's just off Highway 1, but you want to head to ElephantSeal.org to make sure they're open and to check out road conditions up there, which can get a little whacky with giant falling boulders. So, maybe bring a good camera and some binoculars too, because what might you witness midday? A lot of beach lounging.

Luis: You'll see that, around noon when it gets too warm, they have to get in the water to cool down a little bit, because blubber is a really good insulator and their temperature's going to go up no matter what.

Alie: Aha! What about yearly cycles? Do they migrate like cetaceans or do they stay in one place all the time?

Luis: It depends on the species. Most pinniped species are residents. They don't move that much. Some of them, just part of the population moves. For example, California sea lions, the breeding colonies are in the Channel Islands in Southern California. But when the breeding season ends, the males take off. And that's why you see males in San Francisco, in Oregon, in Washington State, in British Columbia. So those are sea lions that moved all the way there from the Channel Islands. The females stick around the Channel Islands.

Aside: So sea lions: the ladies stay put and the dudes jet. When this happens in the species Human, my Montana relatives call this “honky-tonkin’.” So, sea lions: bye dudes. What about elephant seals?

Luis: Elephant seals from California and Mexico go all over the North Pacific, as far as the Gulf of Alaska, the Aleutian Islands. We have animals from central California that have crossed the International Date Line, going west towards Japan, basically, and come back. And when they’re at sea, they’re... We’re talking about thousands of kilometers away from the coast.

Alie: That’s crazy! Where are they sleeping? Are they just, like, bobbing in the ocean?

Luis: They’re sleeping when they’re diving. So, it’s actually pretty cool. There’s a grad student in Santa Cruz that is looking at that exactly. Elephant seals are basically... We just published a paper where we showed that elephant seals are just big vacuums. They’re constantly eating small fish. They’re eating the small fish, and once they reach a point, I guess, when they’re full, they have what we call a drift dive.

Aside: A drift dive? Like drifting off? Luis worked on a recently published paper in the journal *Science Advances* titled “Forced into an ecological corner: Round-the-clock deep foraging on small prey by elephant seals” that talks about these aquatic naps.

Luis: And what they do is they dive, they swim actively to about 50-100 meters, and then they turn on their backs and they just fall like a leaf. Imagine the leaf of a tree falling off... And the reason we know that is because we put instruments on the animals and we can describe the three-dimensional movement of the animal. So they do that and we think that’s when they’re resting. They’re diving, they’re sleeping, and they’re also digesting.

Alie: WHAT. That is... bonkers.

Luis: Yeah, when they’re at sea... Elephant seals are just amazing. They’re just diving constantly, for about 20 minutes on average, coming back up to the surface for just three minutes, and then keep diving, keep diving. So, 90% of their time at sea, they’re diving.

Alie: Ah! What kind of lungs do they have?

Luis: Their lungs are big, but their lungs are actually not very good at holding the oxygen. As a matter of fact, they exhale before they go on a dive. Most of their oxygen is carried in their blood and their muscles.

Alie: Oh my gosh. So they don’t get the bends because they empty their lung sacs?

Luis: Exactly. Seals have amazing adaptations to dive because they’re diving to 2 kilometers. I don’t know how much that is in miles, but someone...

Alie: Like around a mile.

Luis: Yeah, and for up to two hours.

Alie: Oh my gosh. Is that 10,000 meters, around? Yeah? I guess. [*gasp!*] For hours!

Okay, this is weird, question-wise, but underneath their blubber, are they *ripped*? Like, do they have abs underneath their, like, foot of blubber?

Luis: They actually have very big muscles. It’s one of the reasons why, as I was saying, they hold most of their oxygen in their blood and in their muscles. So their muscles are very big, very well-developed, because they’re swimming. It would be like us running nonstop for eight months at a time, and just sleeping for five minutes every couple of days or something like that. It’s a ridiculous kind of lifestyle.

Alie: It's like someone who's shredded wearing baggy clothes.

Luis: Exactly.

Alie: WHAT! Okay, you mentioned males, and I have some questions about dimorphism, because walruses, they have these giant tusks, right? And elephant seals have a dong on their face, and they rip each other apart. What is going on with their sex lives? Why do they have face weapons?

Luis: [*laughs*] Again, it depends on the species. Walruses have a little bit of what we call sexual dimorphism, but it's not that much. You actually see females with tusks; they're just not as big, I guess. In the case of sea lions and elephant seals, they're probably one of the best examples of sexual dimorphism. Males can be two, three, and four times as big as females. That has a lot to do with the reproductive system.

In the case of elephant seals, that big trunk-like thing they have on their face is called a proboscis, and it's just a secondary sexual characteristic. So we don't really... There's a lot of hypotheses on why they have it. One of the likely explanations is that it helps with the resonance when they're making their calls. So, they have this system where... Elephant seals, I should probably say too, they have *the* loudest call. They're louder than lions, on land. Not a lot of people know that.

Aside: Okay, I double-checked this, and yes, a lion's roar can reach 114 decibels, about the level of a live concert. Back when there were live concerts. But an elephant seal can just honk in the face of that and can broadcast his horniness up to 130 decibels, which is louder than a thunderclap, a chainsaw, *and* right about the noise of a military jet from 50 feet away. So, the proboscis amplifies the male's sexual eagerness, which is the most literal use of the term bullhorn. Just bullhorny... with the face.

Luis: And one of the things they use to avoid conflict is males remember the calls from individuals. So, if there's a fight... At the very beginning of the season, all males arrive before females arrive. They all hang out together, and they start having fights with each other. And the winner of the fight... you're going to recognize who beat you, basically. You're going to be able to tell, "I fought that guy. That didn't go so well for me. I'm not going to get into that fight again." So they recognize each other based on their calls. [*Stone Cold Steve Austin: "And that's the bottom line..."*] And one of the things that probably this trunk helps them with is just making their call louder.

Alie: Oh my god, so they're able to make this really loud call so people know, "Don't mess with me. I kicked your ass last season, and then I stole your girl, so you might not want to get into a fight and bite my neck again"?

Luis: Yeah, there's a series of really cool experiments that a friend of mine did where she went to different colonies of elephant seals along the coast of California. And she recorded elephant seals from one colony and played those calls in a different colony, and you can see that the guys that didn't know this particular male that was very aggressive in one colony, they didn't react to him at all to that call. But if they played the same call in the colony where that animal lives, everybody would be like, "Oh!" and freak out because they knew who that guy was.

Alie: Oh my god! And I hate to ask this, but I mean... They have what looks to be a dong on their face. Do they have, like, matching nethers? Like, if you have an elephant seal with a giant proboscis... Like, is he packing or what?

Luis: I don't know, because their penises are internal. Which is a good thing.

Alie: What?! They've got inner dicks? How does that work??

Luis: Yeah. So, they... Again, when you are an animal that swims in the water, you want to reduce the drag, so you don't want to have any extra appendages or anything like that hanging out. So, just like a dolphin, a cetacean, elephant seals, seals, and pinnipeds in general have evolved in a way that their penis is internal. And only when they're going to have sex do they expose their penis.

Alie: Oh my gosh, so you don't know what you're getting into until it's gotten into you.

Luis: Exactly.

Alie: Oh, wow. But you're like, "I guess I'm gonna go by this call. I mean, he's really loud, so..."

Luis: Exactly. They do all have baculums, though.

Aside: What in the dingdong heck is a baculum? Well, it's a dong bone. It's a bone in your dong, if you're a walrus.

Alie: They do??

Luis: Yeah. Most mammals actually have a bone in their penises. Humans, we're sort of the exception.

Luis: I think Native Americans in Alaska used the baculum of walruses and they'd carve it. They use it as a little piece of art, I guess.

Aside: *Little* piece of art? I looked it up. A walrus baculum can measure two feet in length! And doing some... deeper digging on this, I found an anthropological article that traced the origins of *Oosik* art to pretty much the 20th century, with Native Alaska artists doing the carvings, not out of their own traditions, but to meet the demands of tourists looking for a kind of lewd souvenir carving from their wild travels.

So, that being said, pinnipeds of course have a rich history of subsistence living and tradition in Alaska Native, Arctic, Inuit, and First Nations cultures, and other climates where these animals are endemic. And their populations were stable until the last century or so when settler economies meant widespread, irresponsible hunting. There's a really amazing documentary called *Angry Inuk* that highlights the conflict between seal hunting bans that should just target a certain type of commercial hunting versus those bans that harm Indigenous communities.

And on that note, we donate to a charity each week, and this week I'm throwing in an extra one. We're going to do two. One donation will go to FeedingNunavut.com, and that promotes civic improvement by raising awareness about food insecurity and the challenging living conditions in Nunavut, which is up, up in the north in Canada. They also work whenever possible with national, regional, and local organizations to support and evaluate programs addressing issues of hunger, poverty, housing, education, and health – particularly mental health. And Feeding Nunavut is a 100% volunteer-run organization.

So, one donation will go there, and this week an extra one, of course, will go to one of the ologist's choosing. This week, Luis chose a donation to go to the nonprofit Alaska SeaLife Center, which is the only facility in Alaska that combines a public aquarium with marine research and education, and wildlife response. So you can learn more about them at AlaskaSeaLife.org. You can also check the link in the show notes to FeedingNunavut.com. Those donations were made possible by patrons and by the sponsors of the show who you're going to hear about now.

[Ad Break]

Okay, *baculum* to your question, including a common topic: Barking. Asked by Patrons Leah Lodevico, Katie Fetterman, Eric Girard, Bethany Lizette, and Ruby Johnstone. In particular, Ruby asked: Why, *why* do seals always sound like they are calling out to a mysterious man named Brad? [clip of seal call: "Braaaaaad"] Every seal I have encountered in recent memory has screamed [nasally, doofy voice] "Brad. Brad!" This is something I think about a lot, says Ruby.

Alie: Okay. A lot of patrons had questions about... obviously, about dogs and seals, and are they dogs of the sea, and also, what's up with their barks? [clip of sea lion barking: "Arf. Arf. Arf."] Why do they bark as opposed to making other noises?

Luis: So, they are part of that branch of carnivores that dogs and bears belong to, so I guess in that sense they are, kind of, dogs of the sea. They're very trainable, as you can see in animals in aquaria. They're very smart. They are, however, wild animals, so I would highly discourage anyone from getting close to these animals. They move faster than you think, and they might not like you being close to them.

So that's one of the most important messages that I'd like to convey. The fact that, if you see a seal at the beach, stay away from the seal. Don't disturb the seal. Especially if they're pups. A lot of people on the West Coast of the United States, if they see a harbor seal pup, they think the animal is abandoned, and they go and try to rescue the animal, and mom is usually looking at her pup from the water. And what you're doing basically is separating the mom from their pup.

Aside: So if you see a pinniped pup on the beach: Do not cradle it. Do not abscond with it. Seal moms will be like, "Dude, I left to get *one* fish and you took my baby! It's not enough to warm the whole planet and invent polka music? Humans have to go stealing babies, too." So what do you do?

Alie: Ooh, so don't do it.

Luis: Yeah. Don't do it. You can call... There's organizations like the Marine Mammal Center, for example, that you can call if you think that animal is in distress. But don't get close to animals.

Alie: Leah Lodevico had a great question. Wanted to know: Have scientists analyzed a range of seal barks, and if so, can they tell which barks are associated with certain behaviors? Like defensive barking versus protective barking?

Luis: So, a lot of people, when they think of a seal barking, what they actually are visualizing is a California sea lion bark, which are the ones that you see off the pier in San Francisco, on the coast of California and what not. So, they do have different meanings. Males usually do that as a warning sign. But the world of acoustic communication in pinnipeds is just fascinating and I would highly encourage everyone to go and look for Weddell seals calls because they sound like a spaceship.

Alie: Really?

Luis: Yeah, they have the most amazing sound. One of my most treasured experiences is just walking on the sea ice, walking on the water basically, on the frozen ocean, and underneath you, you have Weddell seals swimming around in Antarctica and you can hear them through the ice. They have this incredible, sort of, *Star Wars* robot/spaceship calls that are amazing.

Aside: Excuse me. You need to hear these Weddell seals right now. [*clip of Weddell seal, high pitched going down to lower pitch, trilly sound just like an alien spaceship*]

So that video was uploaded by the YouTube account WeddellSealScience. And apparently, researchers in Antarctica would sometimes fall asleep to these seals' vocalizations, which sound beautiful to our ears and also can be super, super high frequency. Captured by a broadband digital hydrophone device, their calls can go up to 200 kilohertz! So high that a bat would be like, "What am I listening for, people? I don't hear anything."

Even without slowing it down, above ice, again, all kinds of trills and chirps. They make Wookiee purrs and whistles that, according to one researcher, Dr. Paul Cziko, a lead author of a recent study on the matter, went on record as saying, "It really sounds like you're in the middle of a space battle in *Star Wars*. Laser beams and all."

So why do they do it? Why do the seals do it? Nobody knows. But some scientists have floated the idea that it could be echolocation, as they can dive up to 600 meters, which is deeper than one Empire State Building stacked on top of *another* Empire State Building. And they may be hunting in that watery blackness of the deep and using those calls. They really have no idea. Either way, honestly, I've dated guys with bands who, even with a basement full of Guitar Center items, couldn't produce the kind of beats that these fish-eating blubberloafs can stone-cold sober. It's a beautiful thing to behold.

Alie: Have you ever had a moment where you're walking on the sea ice and you're listening to these spaceship calls from, essentially, aquatic bears underwater, and just felt like, "What is my life?"

Luis: Yeah, several times. Every time that I go to Antarctica, that's my experience. I'm not very good about showing... like, I'm not jumpy. I'm not going to be screaming, or yelling, or anything like that. I'm sort of an introvert in that sense. But that is one of the things that... It's one of the reasons why I go back so much. It's just an incredible experience. I've just been so lucky. Every now and then, like every five minutes or so, it hits you like, "Wow. I'm so lucky to be here in this environment working with these animals." Because working with Weddell seals is just one of the most incredible experiences ever.

Alie: Would you say that the Weddell seal is your favorite?

Luis: Yeah. They're just adorable. They don't have any predators from land...

Aside: If you heard the recent Ursinology episode about bears, you may remember that the Antarctic pretty much means, "No bears here."

Luis: So you can approach a Weddell seal and they just look at you like, "What are you?" And they roll onto their backs and expose their bellies, which is what you're not supposed to do if you're at risk, right? So, to work with them is just incredible. They don't understand anything bad is going to happen to them that comes from land or the ice.

Alie: Rob Harbers, first-time question-asker, comin' in hot with a good one. Literally just wrote in: Ever booped a snoot? [*repeated with warped effect: "Ever booped a snoot?"*]

Luis: [*laughs*]

Alie: Have you ever gotten to touch a seal nose and just gone, "Boop."?

Luis: Yeah. As a matter of fact, I have several times. One of the reasons why I do this... Well, it is adorable, but we have these animals under anesthesia to work with them. We have to get them sedated, right? Because they have big teeth and you want to make sure that everyone is

safe. And one of the things that is kind of tricky about anesthetizing seals is that they tend to hold their breath. It's a bad thing to hold your breath when you are under anesthesia. So one of the things that we do to make sure that they're breathing and they're okay is actually stimulating their nose. [*"Boop!"*] So, playing with their nose makes them breathe.

Alie: [*gasping with delight*]

Luis: So, there are several pictures of me actually in the field where you see me booping the seal every two minutes or so to make sure they take a breath.

Alie: Oh. My God. You don't understand how many people just decided to become pinnipedologists. Like, on your resume, one of the special skills is, "I boop snoots for a living." [*laughs*] "I have to. I keep them alive. I must boop their snoots. It's part of my job."

Luis: "The mission in my life."

Alie: Stephanie Broertjes had a really great question: How do they deal with water pressure in their ears? Also, are their whiskers useful?

Luis: So, yeah, their whiskers are amazingly useful. Going back to their ears, their ears are full of fluid. So by being full of fluid, you avoid those changes in pressure that we have. That basically... They lost the chamber that is full of air that we have. Seals don't really have that anymore so they can dive and they don't have that much air in their ears so that's not a problem for them.

And their whiskers, have you ever heard about echolocation of dolphins? The equivalent of echolocation would be their whiskers. Their whiskers are super sensitive organs that they use to track prey in the twilight zone where they actually are hunting. They're able to chase fish within several feet, so if a fish has passed, they can feel the wake of that fish, the turbulence in the water, and follow that path. As a matter of fact, we have colleagues from Japan that have put these tiny little cameras on seals, and you can see how, when they're diving, their whiskers are, sort of, glued to their cheeks, to their face, and when they hit the depth at which they want to find prey, they open their whisker like a parabolic antenna, and they use that to find prey.

Alie: What!

Luis: Yeah, so about 80% of their food they actually consume, they probably find it using their whiskers.

Aside: They can find clams buried in sand with just their whiskers! Imagine having a metal detector on your face, or X-ray glasses to detect buried candy bars. Such is the power of the whisker. Now, how powerful are these whiskers?

Alie: Another patron had a question. Emily Stewart, first-time question-asker, wanted to know: I heard on *Octonauts*; is it true that harbor seals' whiskers are so sensitive they can sense an individual fish from 100 miles away? [*clip from Octonauts: "My whiskers are detecting more ripples. I'd say these ripples were made by a big fish..."*] Is that accurate?

Luis: The 100 miles away is not accurate, but it's basically what I was trying to say. That experiment was done with captive animals, so again, it goes back to say why we need animals in captivity. They basically covered their eyes, and they had a little mechanical fish in the pool, and the seal was able to follow the fish exactly. But it wasn't 100 miles away. It was a couple feet away. It wasn't that bad.

Aside: 100 miles away? No. 100 meters? Yes. See the 2010 *Journal of Experimental Biology* paper entitled “Hydrodynamic determination of the moving direction of an artificial fin by a harbour seal,” or the appetizing 2017 follow-up research study entitled “Seal whiskers may sense fish breath.”

Alie: PJ had a great question. They said: I’m obsessed with seal locomotion. How did their ridiculous movement evolve and why is it perfect? Doogins, first-time question-asker, says: Hello, I have questions about how they get around on land. They just flop! What is the land speed of a seal and does it hurt their little stomachs if they flop onto something other than ice?

Luis: So, when we’re talking about locomotion of seals, the first thing that comes to mind is how they move in the water. And you have two different kinds of locomotion in there. You have sea lions and fur seals, so the otariids as we call them.

Aside: ‘Otariid’ means ‘ears’, so the eared ones. How do they move?

Luis: And they use their fore flippers. So, imagine like a penguin, basically. That’s how sea lions and fur seals swim. And then you have the true seals, and they use their hind flippers. Like a fish, basically, they go side to side. So those are the two different motions they have when they’re swimming in the water. And you can sort of see how true seals are, sort of, better adapted to the water than sea lions are.

When it comes to land, of course they had to go through so many adaptations to be successful at sea that they’ve lost their grace when they’re walking on land, so they have to move in a clumsy way. True seals have lost the joint that, basically, connects your femur to your hip, so they have to move like a snake, basically. That’s the only way they have to move. Sea lions, they still have the ability to walk on all fours. If you’re not sure whether it’s a seal or sea lion, if it’s walking on all fours, that’s a sea lion.

Alie: Oh!! That’s how you tell the difference?

Luis: Yeah, so you can see a sea lion perfectly walking on all four. They sort of project their hind flippers forward and they can move on all four. That’s a sea lion. That and the ear; that you can see the external ear on sea lions.

Alie: I feel like that’s such a good life hack. Somehow, in a trivia game, that’s going to come up important, or someone’s going to time travel and be like, “Wait! I know this!” *[laughs]*

Luis: The other part about how fast they move, they move faster than you think they move. I have had a male adult elephant seal, which is something like three tons of blubber and muscle, chasing me up a dune that was about 20 feet high. And I had to run... I was basically playing bait so that the male would let us do the work we needed to do with the females. And I had this male following me, and it would keep up with me so I had to try to run as fast as I could up a dune, and this animal was still chasing me. We did that, like, ten times in an hour, and it was still able to keep up with me. It’s one of the reasons why I keep telling people: Do not get close to seals. They move way faster than you think they move.

Aside: Never cockblock a seal. Just leave it to the professionals who signed up for this life.

Luis: They could kill you. A male elephant seal could kill a human for sure.

Alie: Really? Would they do it with their teeth, essentially?

Luis: Yeah, or if they catch you, they’re going to try to fight you. Three tons of animal that are usually frustrated, especially during breeding season. Elephant seals have the highest

testosterone concentration of any mammal. So you can imagine, with all that testosterone going through their system, how frustrated they are if they're not getting any females' attention. So, you don't want to be there.

Aside: So beware the horny, angry, incel pinnipeds. Incelephant seals, really.

Alie: Oh man! Yeah, so Leave. Them. Alone.

Luis: Absolutely.

Alie: And you know what? I have a personal question. In terms of, like, videos that we've seen. Do you know that one video of the walrus who looks really shy getting a birthday cake?

Luis: Yeah.

Aside: The birthday cake, by the way, is just an elegant affair, crowned in a row of fresh herring. And the birthday walrus is doubled over bashfully, covering its face with its flippers. Just imagine an alive, coffee-colored sleeping bag with mittens for hands who is touched beyond words.

Alie: Is that... Is there an emotion, like, "Aw shucks," that pinnipeds feel? Or is that just trained into a captive walrus?

Luis: I'm sorry to say that that's probably just training.

Alie: Okay. Just making sure.

Luis: Yeah, I don't think... I mean, after working with them for so many years, I can assure you that they don't feel any shame whatsoever. *[laughs]* They will fart in your face. They will vomit. They don't have any inhibitions.

Alie: *[laughs]* They're not like, "A cake? For me?"

Luis: Yeah, no.

Alie: They will fart fish-fart right in your face and not have a second thought about it. Oh my gosh.

Anne Hardtke wants to know: Do they have tails? I met a sea lion and it had a small, finger-size tail and it was so weird and cute.

Luis: Yeah, they do have a tail. It's about the size of your thumb, a little bit wider. And they move it.

Alie: *[giggle-laughing]* Why is that so cute!

Luis: Also, fun fact, just so you know: southern elephant seals stick their tongue out when they're under anesthesia, and we have no idea why.

Alie: Awww!! Do you ever go "floopy-floopy-floopy"?

Luis: *[laughs]* With gloves on my hands.

Alie: Gloves, yeah. That makes sense.

Andrew Hagemann, first-time question-asker, wants to know: When do baby seals lose their white fur and do they have, like, an ugly, tufty, teenage phase like the rest of us? Or are they just cute forever?

Luis: Yeah, they're thinking of seals that live up in the Arctic, and most of them are what we call a capital breeder, which means that they... They optimize their time. They just want to be moms for a short period of time. After birth, they give their pups a meal that has a lot of fat,

and their lactation periods are very short. As a matter of fact, the shortest lactation period from any mammal is four days for the hooded seal.

Alie: [*gasp!*] Are you serious?

Luis: Yeah, and after four days, mom takes off. "Bye, baby. You're on your own."

Alie: She's got shit to do!

Luis: Exactly. So pups, when they're born, they don't have that much blubber, right? So they depend on this fur to keep warm. But with milk that is that fatty, they're going to put on a lot of blubber very, very fast. After they do that, they molt their coat and they do look very ridiculous when that happens.

Alie: Aww!

Luis: But it's usually a couple of months... weeks to months after mom leaves, they're going to molt their baby coat and they're going to grow their adult coat until the next year. So, all seals and sea lions, they molt once a year.

Aside: PS, I looked up pictures of their molting, and they kind of resemble, like, a fake fur bench you left outside for a decade. Patchy, worn, awkward. Or like if you fell asleep midway through drunkenly shaving your head.

Alie: We had a couple questions about teeth. Kayla Smith, Ira Gray, Rich Flight, Claire Meyer, Julia Splittorff, and Manette Eaton, first-time question-asker. People wanted to know about crabeater seal teeth.

Luis: Oh, that's awesome. I did my dissertation on crabeater seals and I'm working with them right now, so I love crabeater seals.

Alie: Oh my gosh! Okay, try to describe what their teeth look like, because I saw them for the first time and I was like, "This is like a fractal... I feel like I'm on acid looking at a skull." What are they doing?

Luis: So, it's a very complicated teeth structure, and if you look at them, they fit perfectly, and when they close their jaws it kind of looks like a cage, right?

Aside: Imagine triangular molars that have almost fractally swirls on all sides. They look like a van Gogh painting made of teeth. Horrifying! Gorgeous! These Antarctic seal teeth.

Luis: And they're eating krill. So, they effectively are using their teeth as sieves. If you think of a baleen whale as filtering out small plankton out of the water, crabeater seals do the same thing but with krill. And they haven't evolved these complicated baleen structures like the whales have, but you can actually see how the structure of their teeth are similar to that. We've seen that in the evolution of cetaceans as well.

Alie: So they look like they are absolute bone grinders, but really they're just for filter-feeding tiny things?

Luis: Yeah, crabeater seals, their diet is over 90% krill.

Aside: Krill, sidenote, are these two-inch long shrimpy-looking crustaceans.

Luis: And they're using those teeth basically as sieves to filter out krill.

Alie: Are they eating any crabs?

Luis: No. They don't eat crabs.

Alie: Wait, WHAT?!

Luis: They're called crabeater seals... I think the reason for that is that it's a mistranslation from the German word for crustacean. Someone assumed... They were calling them crustacean-eating seals, and someone translated that as crab-eating seals.

Alie: Oh my god. Because I saw those teeth and I was like, "They must just be grinding crazy crabs." Oh my god.

Luis: Leopard seals have similar teeth as well. Leopard seals eat krill as well.

Alie: I'm so glad you mentioned leopard seals because Jennifer Tran wants to know: Was the leopard seal depicted somewhat accurately in *Happy Feet*? And Scotty Dee, Kimberly Cooley, Ellen Skelton, Helen Moore, and Rich Flight all had similar leopard seal questions. I'm going to read Rich Flight's question verbatim: Are leopard seals just the most badass fucking seal in the world, and do they actually have any predators? And Kimberly Cooley asked: Do leopard seals only get a bad rap in movies because they eat penguins? Anytime a seal is a bad guy it's a leopard seal. And yeah...

Aside: Other folks who wanted to know this include Leigh Giberson and Ellen Skelton, who asked: Are they like the pit bulls of the sea? People have made them out to be bad but they're cuddly and adorable?

Leopard seals. Are they vicious? Luis says it's not really an applicable question.

Luis: I mean, they're animals just making a living and they have to do whatever they have to do to survive. They do have a bad rep. It's somewhat fair. They do eat puppies, and penguin chicks, and adults, and that's true. They also eat fish. They also eat krill. Some leopard seals hide fish that they hunted, and they put it under rocks in the water. And if some other animal sees where they're hiding, they go and steal their fish. So they're very smart like that.

I've seen a lot of leopard seals... They do get a bad reputation, but I think it's just not fair. They are super aggressive predators, though. A diver died because a leopard seal killed her. It was a woman. Basically, it bit her head. So, I would never get in the water if there's a leopard seal in the water. All the divers in Antarctica, they know that if there's a leopard seal in the water, you don't get in the water. That's it.

Alie: Wow. Okay. Have you ever been chomped on by a seal?

Luis: No. I'm one of the few of my colleagues that have never been bitten.

Alie: Good job!

Luis: I also tend to be very careful. I do get tunnel vision but I've somehow been lucky.

Alie: One question a lot of folks had... I'll list them all in an aside.

Aside: Sara Rocero, Anthony Willis Jr, BeckytheSassySeagrassScientist, Kathleen Sachs, Jennifer Tran, Dane Schuckman, Shayla Zink, first-time question-asker Alexandre Catulle, and...

Alie: Holly Spencer, first-time question-asker, wanted to know: How badly is climate change currently affecting pinnipeds? And are there any species which are in particular danger of extinction?

Luis: Yeah, we're predicting that some species are actually going to be able to exploit new habitats. So, southern elephant seals, for example, they don't really like the ice. With the ice retreating in Antarctica, they're now able to exploit new resources that weren't available to them back

in the day. A lot of the seals actually live in the Arctic and Antarctic latitudes, and they depend on the ice. So with the reduction of ice, you're basically losing your habitat. If there's no ice, there's going to be a lot of negative consequences for all those populations and species of seals.

Aside: And Luis says that the smaller inland seals are at the highest risk of extinction when the climate continues to warm. And I was like, "Wait, inland seals?" So yea, patrons Andrea Levinson, Ethan Bottone, and first-timer Olivia Goldsmith, and also Lillie Stumbo. All of you asked about the Baikal seal, the only freshwater pinniped species. And there are a few other species, like the spotty ringed seals and some freshwater colonies or freshwater subspecies of other types of pinnipeds that are in lakes or brackish water of the Caspian Sea. But these Baikal seals are the only ones that are just straight-up living in the freshwater.

How did they get so far inland? I pictured them just hopping along on their guts to get there, or maybe boarding a smoky Greyhound bus decades ago. But Luis says that at some point there was a channel that connected these bodies to the sea. Way less romantic than a bunch of individual seals just saying, "Screw this" to the ocean after a breakup. But either way, they got there and many, many moons ago the channels kind of let them float there like a log flume ride. But clearly, when climates change, survival changes. Sometimes too rapidly for them to adapt.

Now, on that note:

Alie: Heather & Kate, both first-time question-askers, want to know: What do pinnipeds need from humans? Like, is there a Start-Stop-Continue list that you can share on their behalf?

Luis: I think that depends on where you are. One thing that is becoming more and more common, maybe it's because of social media and access to cell phones, is harassment. So, when I was talking earlier about not getting close to animals, let them be... Enjoy nature; you can take pictures of animals without actually having to disturb them. That's probably the best thing to do. You can use zoom to take pictures of seals instead of getting too close to them.

The other thing, by far, that I think as a society, the biggest challenge we're all facing is climate change. So, anything that we can do about climate change, to solve the problem, is going to obviously help protect these animals.

Alie: On that note, we had a lot of folks who are kayakers write in. Rather than approaching seals on land, a lot of people wrote in about seals approaching them. Kathleen Sachs wants to know: Why did the seal slap a kayaker with an octopus?

Luis: *[laughs]*

Alie: Terry Goss wrote in... I love this because Terry Goss wrote in a little storytime I'm going to read you: While on a leisurely shore dive, I had a young harbor seal follow me around and came up to chew on my fins a bit. Not unusual, I've had that before, but he started getting more and more touchy and started grabbing my leg. I swam ahead to shore but he became more aggressive with my legs. Was this play activity, or was he being sexual? It didn't feel aggressive, per se, but he could've definitely ruined my drysuit.

And Grace Anne Read wrote in: Why would a seal be motivated to somewhat aggressively boop my kayak? This happened to me while in a red kayak, and then the seal just stared at me a minute. I would like to know what it was trying to tell me.

And Kathleen Sachs says: Why are there so many videos of seals climbing into kayaks? Rataatnat, newbie and enthusiast, they wanted to know: Why are seals so gloriously curious? I had one swim under my kayak last week unannounced and lost my actual bananas.

So yeah, if you're kayaking, what should you do if one comes close to you?

Luis: So, the first one, I'm pretty sure that was... I want to say it was in Australia, the one that slapped the kayaker with the octopus. And that's just basically... The kayaker was in a bad place at a bad time. Because sea lions in particular, they do that a lot. They bring the prey up to the surface and they shake their head violently to, sort of, rip apart their prey. And this guy was probably just in the wrong place at the wrong time. So, that's what happened.

All of the seals... I don't really have a straight answer. These are my hypotheses. I think basically seals are seeing all these kayaks as potential haul-out sites. So, if they're tired, they just want to rest a little bit, usually what seals do is they just go and haul-out on a platform, or a buoy, or land, or a rock, or whatever it is. So we're offering them that in their environment, so they can come up to the surface, see a platform that is available to them, why not, right? And someone could think also, maybe there's a shark in the water and they just want to get out of the water. That could be an alternative explanation. So, the best thing to do is just stay calm. Don't try to touch the animal. Just let it be, and at some point it's going to go back to the water.

There's lots of videos of animals that do that on boats, for example, that are being chased by orcas. There's videos of sea otters, seals, and I've actually seen sea lions that are under attack by orcas, and they get super close to the boat, or a ship, or try to climb up to not be in the water.

Aside: So, if you see a seal trying to stow away on your canoe, it might just need a break. Or it's evading a bloodthirsty predator. Just don't go bananas with speculation.

Oh, speaking of which, Morgan Jennison, Ann M, Madeline Lewis, Jade Pollard, Andrea Levinson, and first-time asker Kness had one question that was bananas.

Alie: Several people wrote in a question. I have no idea what they were talking about, but Vespa said: What makes them go into banana pose? And are they expecting me to draw them like one of my French girls? *[laughs]* And I looked it up, and they really do look like a banana. How are they doing... I can't do that yoga move. But now that we know they're ripped, that makes more sense. But yeah, why are they banana-ing?

Luis: So, we also call it the donut. Sometimes they touch their flippers with their head and they look like a little donut. The most likely explanation is that happens because they're trying to keep their flippers out of the water. If you think about when we were talking about the blubber and how well insulated they are, their blubber is covering their entire body. So their entire body is really well insulated, except for the flippers. So, if for whatever reason they're too cold or too warm, they use their flippers to regulate their temperature.

So if you're too cold, you want to keep your flippers out of the water and exposed to the sun so they warm up. If you are too hot, you can put your flippers in the water and that will help you cool down a little bit faster. Because the rest of the body, you don't sweat, you don't... You don't have the ability to dump heat as we do easily.

Alie: Do they not sweat?

Luis: No.

Alie: Wow. Cool.

Luis: So the only way to dump heat or warm up is through their flippers. They have other spots on their body that are highly vascularized, so a lot of blood flow through those areas, and that's one of the reasons why they do the banana pose.

Alie: Oh my gosh, one last question from a listener. Lizzy Carr summed it up for a lot of us. Wants to know: Are seals mean or nice? I read something recently that said they're really mean, but they look so sweet. My heart can't handle if they're dicks.

Luis: I wonder if I said that... *[laughs]* Whenever I teach marine mammal class, I try to apply a little bit of shock therapy to my students and tell them, "Seals, even though they look adorable and you want to hug them, they are wild animals and they can be mean animals." And I don't mean it like that, I specifically mean we have... We sort of idolize seals and think that they're these cuddly animals, and they're not. They're wild animals. They can bite. They transmit diseases to humans and we can transmit diseases to them. So it's one of the reasons I always tell everyone to stay away from the seals. They're just animals. I don't think they're... I think humans are mean. I don't think animals are mean.

Alie: Well said. Agreed.

On the topic of things that do or do not suck, what is the worst part about being a professional pinnipedologist who gets to travel to distant parts of the globe, and gets to boop snoots, and gets to walk on the ice? There's gotta be something that sucks.

Luis: It's not really about being a pinnipedologist, but it's more about... I guess it goes back to being human. In science, because the competition is so fierce and so... There's so few resources sometimes people forget about their ethics and the fact that they're humans, and they do things that are not very nice. Let's just put it like that. It's a very minority. There's not that many cases where that happens, but it does happen. That's a big bummer to me.

Alie: The fact that you recognize that means you're probably not doing that, which is good.

What about the best thing about your life as a pinnipedologist?

Luis: There's a lot of good things. I was very negative about humans in the previous answer, but my colleagues are by far the best human beings I've ever met. My best friends are pinnipedologists. My whole circle of colleagues is just amazing, so that part is incredible. Travel is a really good thing. I've been to every continent on the planet for either meetings or fieldwork. And by far, I've got to say, working with the animals is just beyond what anyone can imagine.

The fact that you can be so close to these animals in Antarctica, for example. I never imagined in my wildest dreams that I would be sedating a Waddell seal, which are by far the most adorable seals on the planet, and working with them, and taking care of a pup, or working with the mom for example, and just... Yeah. All that experience working with animals is by far the most incredible part of my career and I wouldn't change it for the world. I will keep doing this until I can't move anymore. There's so many opportunities to enjoy being in the wild, but having those encounters with animals, there's nothing like that.

Alie: Just make sure to keep outrunning them.

Luis: Yeah. *[laughs]* And keep booping them.

Alie: Yeah! Keep booping and outrunning them!

This has been such a joy. I just can't thank you enough for... You have been on my list for so long!

Luis: Oh, thank you. It's been a pleasure.

So ask Arctic explorers adventurous questions, sometimes embarrassing ones, because our time on the planet goes by fast. You might as well fill your skull with wonder. Cut bangs. Text your crush. Leave your hair dye lifter on twice as long and make the Buttery Jack reverse ombre a summer trend. If you have no idea what words I'm using, you can see my Instagram [@AlieWard](#). I had a hair mishap and we're calling it the Buttery Jack. It's what we're doing. Summer. Buttery Jack. It's happening.

Now, to follow Luis, which of course you want to do, you can find him [@LuisH](#) on Twitter, or [@LAHuckst](#) on Instagram. Those handles and his website are linked in the show notes below – very easy, click, follow – as well as on my website, [AlieWard.com/Ologies/Pinnipedology](#). There are links to a ton of things we talked about, and videos. There are also bleeped episodes and transcripts on my website. Those are transcribed by Emily White of [TheWordary.com](#). Thank you, Caleb Patton, for bleeping the episodes.

Thank you to every patron who submitted questions and who supports the show. You can join them for as little as a dollar a month. You can submit questions to ologists at [Patreon.com/Ologies](#). Thank you Erin Talbert for moderating the *Ologies* Podcast Facebook group. You're all so nice there! Thank you to everyone on the [Discord](#) and the [Subreddit](#) for *Ologies*. Hello out there. Thanks to everyone who came to the Live Show, by the way. Super fun.

[OlogiesMerch.com](#) has t-shirts, and hats, and socks, and stickers, and face masks, and more. Thank you, Shannon Feltus and Boni Dutch of the podcast *You Are That*, for managing that, as well as help from Susan Hale and Noel Dilworth who help schedule the interviews. Kelly Dwyer designed and maintains [AlieWard.com](#).

Thank you to a duo of recently shorn editors, Jarrett Sleeper, who has agreed to marry me, and Steven Ray Morris, who hosts *The Purrrcast* and *See Jurassic Right*, and has never agreed to marry me, but both are top-notch dudes. Nick Thorburn wrote the theme music and he is in a very good band called Islands. They have a new album coming out soon.

If you stick around until the end of the episode, you know I tell you a secret. This week, it is 7:48 pm on Monday, May 24th, hours before this comes out. I'm in Cincinnati, I'm in a hotel. I have seen one alive cicada from 200 feet away. I'm so thrilled. I can see their shells on the tree trunks from afar. I'm finishing this episode and then I'm heading out to get dinner with Thanatologist Cole Imperi and Victor Imperi, and I'm seeing the cicadas at their house. I've waited over 30 years to meet a periodical Brood X cicada.

And when I saw the shells, the exuviae on the tree trunks this morning, I legit got teary-eyed. I'm so excited. I'm so excited to see Cole and Victor. I'm going to hug them so much! Everyone's vaccinated! Whew! Man, decades of wanting to see Brood X. It's about to happen. I'm just very excited. So I'm going to send this off. I'd say I have butterflies, but I don't. I have billions of squirming, fluttering cicadas in my belly. Very stoked.

Okay. Berbye.

Transcribed by Emily White at [TheWordary.com](#)

More links that may be of use:

A donation from this episode went to FeedingNunavut.com and also to AlaskaSeaLife.org

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[Luis's papers](#)

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