

Sidedoor Season 3, Episode 12: 50 Shades of Gray Whales

[INTRO MUSIC]

Haleema Shah: This is Sidedoor. A podcast from the Smithsonian with support from PRX. For the first time: I'm your host, Haleema Shah.

[INTRO MUSIC]

[WHALES IN POP CULTURE WATERFALL]

Man: A whale is starboard! There she blows! There goes loops!

HS: So, I've never seen a whale in the wild. I grew up in the midwest and I guess it's one of those of sight, out of mind things. The only contact I've actually ever had with a whale has been through pop culture. So from the monsters of "Moby Dick" and "Pinocchio," to the really sad whales in "Whale Rider" and "Free Willy." And also "Free Willy 2" and "Free Willy 3." But when I heard Nick Pyenson talk about them a few weeks ago, I could not stop thinking about whales. But I should also add that the only person who is more curious about whales than I am, is Sidedoor's producer, Justin O'Neill. Hey Justin.

Justin O'Neill: Hey Haleema. And you flatter me.

HS: (laughs) Well, I know you went to the whale garage, Justin. Tell me what it was like.

JO: Yeah. So the Smithsonian's whale garage, it's part of the Smithsonian's behind the scenes - - what people call the Museum Support Center. It's where the museums keep all of their millions of objects that aren't on public display in the museums. And you need to put them somewhere and, you know, downtown D.C. there's no extra space. So I was brought here by Nick Pyenson.

HS: OK. Let's take a second to describe what Nick Pyenson is like.

JO: (laughs) I think of him as sort of a globetrotting, Indiana Jones-type of guy. Like, I get emails from him from Alaska and then next time we'll talk he'll be heading to Oman. So he's just everywhere at once.

HS: I should also mention here that Nick is the curator of fossil marine mammals -- that's why he travels a lot. And he works at the National Museum of Natural History. And he studies marine mammals around the world -- like ancient whales and dolphins, mostly. And let's just say he's very passionate about his work.

JO: Yep. That's an understatement.

HS: So what was the whale garage like?

JO: Well the first thing you see when you walk into the building are two huge blue whale jaw bones. And here's Nick telling me about those.

Nick Pyenson: Yeah, so here we are walking up to U.S.N.M. 268731. And these are the largest blue whale jawbones in any museum collection on the planet. They're about 23-feet long, weigh some 12 thousand pounds. These belong to a 92-foot long female.

JO: But there's all kind of other bones in there too.

NP: Here, check this out. That's a blue whale skull.

JO: Holy smokes. That's like -- this building's like, I don't know, 40-feet tall probably.

NP: You can't roll that skull standing up into this building.

HS: So whales are big. I've got that. But I've never actually seen a blue whale or its skeleton. So, give me a point of reference.

JO: Yeah. They're like borderline overwhelming in size. But since I don't really know like a useful size comparison. Here's Nick that to me. So, I asked him about the size of a blue whale's eyeballs.

NP: For that blue whale? Probably be about the size of a grapefruit.

JO: And how is big is their heart?

NP: Oh their heart. So there's a great, plastinated blue whale heart that's on display at the Royal Ontario Museum from blue whales just collected a few years ago, off the coast of Newfoundland. That heart weighs some 400 pounds. It's got vessels that, at their largest, the diameter of dinner plates. It probably looks like a gigantic couch.

JO: Oh my God.

NP: Yeah, so when you lie down on a couch at home, you can think, "This is about the size of it a blue whale heart." It's gotta be a big couch.

JO: And we should also say that the importance of this place isn't just a showcase of whales and, you know, how big they are. It's an active research center. For Nick Pyenson and other researchers basically to be able to watch early whales evolve into modern whales.

NP: Because you can go line up a gray whale skull, a humpback skull, a fin whale skull, blue whale skull -- that kind of side by side comparison is kind of the gold standard in natural history studies.

JO: So, that's the whale garage.

HS: Thanks, Justin. So, we know that whales are mammals: they give live birth, they nurse their young, and they breathe oxygen. Which also means that they can drown which is very surprising. They first evolved on land. And they can learn complex behaviors from one other. And we have such a complicated relationship with them. Because for centuries, we hunted them relentlessly. They went from like, everywhere, to pretty much nowhere. And now we're in a moment where many types of whales, in a lot of places, are protected. But that's just in time for a new pressure to test their resilience.

HS: So, this time on Sidedoor, we'll tell a story of all whales, through the eyes of one particular species: the gray whale. It was once thought to be extinct. But gray whales had some surprises in store -- and they keep surprising us today. They're a success story, with a twist.

[BREAK]

HS: After Justin's trip to the whale garage, I sat down with Nick Pyenson for a chat. He's a Smithsonian paleobiologist and ancient whale curator, but we like to call him the whaleobiologist. Nick recently wrote a book titled, "Spying on Whales: The Past, Present, and Future of Earth's most Awesome Creatures." And I wanted to start with some hard questions.

HS: What is a whale?

NP: A whale is a lineage of hoofed mammal many tens of millions of years ago that went in a different direction and adapted over the course of geologic time to a life completely divorced from land but in the water.

HS: And yeah. You just heard him right. He just called whales descendants of "hoofed mammals." They used to live on land and their closest living relatives are actually hippos.

NP: Some 50 odd million years ago, whales had four limbs and blade like teeth. And probably had fur. But that's a very different beast from the whales today.

HS: Nick said that these land dwelling pre-whales probably lived near water and like whales, they probably ate fish. But, yeah. It's very different from what people actually think of as a "whale."

HS: I'm trying to picture what animal -- the prehistoric whale -- looked like because right now I'm imagining, like, a golden retriever or something.

NP: Yeah. I mean it was probably a very weird looking retriever.

HS: (laughs)

NP: I don't think you could really just pick one up 50 million years ago and, you know, pet it probably wouldn't enjoy that. Might snap at you. But yeah, they -- they looked weird. I mean there's some -- some of these early species of whales -- and there's a lot of different stripes. Some look more like otters with long snouts. Others maybe looked more like sea lions. There's a whole variety to them.

HS: Pyenson says it's hard to know what first pushed whales from land into the water full time. Maybe they were good at hunting food in the water, maybe they there were land predators they were avoiding, or maybe their habitat suddenly changed.

NP: So over the course of 10s of millions of years, evolutions transformed whales from animals that splashed about rivers to animals that range from pole to pole. And I think that's remarkable.

[MUSIC]

HS: For millions of years, whales kept evolving from land mammals into ocean. Their finger bones flattened and were wrapped into broad paddles. Nostrils shifted from the tip of their nose back between their eyes. And they got really really big.

HS: The blue whale is the largest animal that's ever lived on the planet. The biggest are estimated to be 110-feet long and over 380 thousand pounds. That's as long as a basketball court and as heavy as 30 elephants.

HS: In addition to blue whales, there are 87 other species of whales There are humpback whales, sei whales, minke whales, right whales, sperm whales, narwhals, dolphins, 22 kinds of beaked whales and many more. They're diverse. But the whale-iest of whales -- and an excellent example to understand the story of all whales -- is the gray whale.

NP: Gray whales are different from many of the other big whales in that they have a very coastal lifestyle: hanging out, migrating -- not more than a few kilometers off the coastline.

HS: Grey whales live in the North Pacific and they're known to be very easy-going -- almost friendly? And a lot of videos on Youtube show whales approaching tourists in boats.

[YOU TUBE CLIP]

Man: Hey, let Sabrina get in there.

Woman: Are you serious?

Man: Yeah, that's a calf. Come back here, Sabrina. Come back here, Sabrina.

Woman: Oh the mother's right here! There's the mother!

HS: They even bring their babies with them. And they're curious.

NP: So I think a gray whale, they probably don't get the credit they deserve, you know. (laughs) There the Rodney Dangerfield of whales. I mean they -- they have this gun metal gray, kind of mottled skin. They have kind of a blunt beak like face. They can be really friendly. Their blows are heart shaped

HS: Size-wise, gray whales are kind of a Goldilocks whale. Not too big, not too small. To scientists, they're basically "medium sized."

NP: But I think what makes them really interesting is -- is the scales of their lives. They migrate 10 thousand miles every year and they do that across incredible latitudes. And they're clearly able to do things that other whales aren't.

HS: So, the way that gray whales live their lives is that in the summer they fatten up along Alaska's coast, scarfing critters along the seafloor. And then in fall they swim all the way down to Baja California, where pregnant females give birth. And the rest? They pretty much mate and frolic. Gray whales shelter all winter in these shallow Pacific lagoons along the coast. They wait until the babies are strong enough to make the swim back north in the spring. This is one of the longest mammal migrations on Earth.

HS: But it's in these same picturesque lagoons where the gray whale's story takes a turn. In the place that friendly gray whales turn for safety, they were ambushed. And they slaughtered, by us.

[MUSIC]

NP: They were hunted in the 19th century. But because their breeding grounds -- the one place where they would migrate from and back, Baja California, they were nearly systematically wiped out because whalers in the Pacific figured out where they were moving.

HS: Humans have been killing whales for meat for thousands of years. The earliest depictions of people hunting whales come from Korea and date as far back as 6,000 B.C.

NP: Whales have gigantic sizes and that's kind of inspiring in itself. And also a source of food and nutrition, sustenance. And that's still true today for Arctic peoples throughout the world. In many indigenous cultures, even in the tropics, they still hunt whales.

HS: But their size and ocean-going nature kept them safe from going the way of the woolly mammoth or the dodo. They were hard to kill.

HS: But large scale whaling really got going in the 1700s. Hunters killed whales for their oil, which was used for soap, lamp fuel. Their meat was sold in markets and bones used as fertilizer. Whaling was obviously dangerous for whalers but anyone who's read "Moby Dick" knows that it could be dangerous whalers as well.

HS: The killing was done from small boats that were rowed until they were right next to a 60 thousand pound gray whale. Then the boat's crew would drive their harpoons deep into its flesh. At this point, whales usually dove deep, trying to get away. The harpoons were attached to lines, tied to the boat. Often, men were tossed overboard when whales pulled these small boats under. Whalers called gray whales "devil fish" for their ill-temper after they'd been harpooned.

NP: It also tells you something about just how lucrative the oil and other products had to have been for people to undertake this incredibly risky approach to killing a large mammal at sea.

HS: And if they successfully killed a whale? They had to strip wide sheets of blubber from the whale as it floated next to the ship and boil it down in giant pots.

NP: So you had to have some kind of fire aboard the ship to render that tissue down to its oily components. That's risky all the way through. I probably would not sign up for it. But I think many of the people didn't have the choice to do that. It was an economic reality for them.

HS: Hunting different whales took different strategies. In the mid-1800s there was a crucial invention that let whalers kill at wildly unsustainable rates: an explosive harpoon was shot from a ship-bound cannon, exploding on impact.

NP: And so that led to a scale of slaughter that we now know is over two million -- maybe three million whales were killed in the 20th century. And it -- I think it speaks to the abundance of whales that were out there that we were able to kill so many. No one today remembers what it was like to have billions of passenger pigeons flying around in these flocks that reportedly blotted out the sun. And in that way, I don't think we really understand what the oceans were like before whaling really got -- got to be the way it was.

HS: If you missed it: two to three million whales were killed in the 20th Century. By the end of the 1920s, there were so few gray whales left that people thought they might be extinct.

HS: So what changed? We'll find out. After a quick break.

[BREAK]

HS: OK. So when we left off, things weren't looking so good for gray whales -- or any whale for that matter.

HS: In the 18 and 1900s, whaling was big business around the world. Whales -- especially the largest species -- were being slaughtered by the million, without giving much thought to, "How many of these whales are we killing and how many are there left?"

HS: One of the first people to take that question seriously was Remington Kellogg. He was a Smithsonian paleontologist in the 1930s. And he has a surprise in store for our gray whale friends.

NP: Boy, he's -- he's a complicated figure for me because -- well one, I never met him. He died in 1969.

HS: And secondly? Kellogg had the same job as Nick Pyenson, separated by more than half a century.

NP: If you do a literature search on him, you're going to find a lot of papers about fossil whales, which appeals to me professionally. But what's really, really interesting about him, I think, is that he was a diplomat as much as he was a scientist. He was one of the first, what I'd call, a science diplomat.

HS: Kellogg wasn't the type of guy who kept a journal about his hopes and dreams. We don't really know much about what he thought.

HS: But here's what we do know: He recognized that whales weren't going to be around much longer if we kept killing them as quickly as we were. But how could he make the public care about whales when we didn't know they live in close knit family units and grieve their dead? People just saw whales as huge monsters. Kinda how people saw sharks after the movie "Jaws" came out. It's safe to say that when whales were slaughtered, the public wasn't too worried about it.

HS: So he and other like-minded scientists helped create a series of organizations that became known as the International Whaling Commission.

NP: And so I describe it in the book is kind of like a gentleman's hunting club. I mean, it's a very different way to think about conservation than we do today. And Kellogg presided over it for decades.

HS: Now, they didn't just say, "Hey everyone! Stop killing whales!" It was a powerful industry. All they managed was some catch limits on how many whales a country might kill. And at the time, these limits weren't really taken seriously.

HS: But even so, in 1936, Kellogg and his crew created a ban on killing gray whales and right whales. At the time, there were very few gray whales left. But it was easier to create protections for a whale that people couldn't find.

NP: Yeah. During this time in -- of mid-20th century, I think most whaling wasn't really focused on gray whales. There are so few left. Nobody really knew how many there were.

HS: Pyenson says that for him, it's hard to sort out Kellogg's legacy. Sure, he tried to save the whales, but he definitely didn't succeed in creating meaningful protections. It was a first step, though.

NP: I think he watched the decimation of many populations, species pushed to the brink of extinction. And he was doing his best. But the real outcomes that you think a scientist might care about largely didn't happen. They -- you know, he died not knowing if whales made it through the 20th century or not.

HS: In the 18 years Remington Kellogg served on the International Whaling Commission, roughly one million big whales were killed.

HS: But in the 15 years after Kellogg stepped down from the IWC, two things happened: because we had killed so many whales, whale oil was harder to get. As the 20th Century wore on, whale oil's commercial use was increasingly replaced by petroleum oil -- the stuff from the ground. But the main reason we stopped killing whales was was a social shift. We knew more about whales. By the 1970s, people cared.

[WHALE SONG]

NP: So we discovered whale song. Or discovering the biological sonar that toothed whales used. All those scientific discoveries were happening at a time of the emerging environmental movement. And so, 1972 with the US Marine Mammal Protection Act, that really set a course for how we approach marine mammals and whales are included in that. That now -- today I'd say it's much more about protecting coastal environments. People get that. That: protect the whales, protect our -- our -- the entire ecosystem in which they belong to.

HS: In the 71 years since gray whales were first officially protected, their numbers have slowly rebounded. It's thought that there are about 20 thousand of them off the U.S. Pacific coast. So, that's good, right?

HS: But as usual, it's not that simple. Because whales have other pressures, too. And guess who those pressures are caused by? Yeah. Us. The biggest of those challenges boils down to our impact on the planet. Humans live all over the planet, including the oceans. And wherever our fishing lines or international ships are, that's a point of conflict for whales. Our switch to petroleum-based oil is also causing a major climate shift, which has a lot of environmental impacts. This leaves the future uncertain for many whales -- and pretty much everything else.

NP: Right. Climate change is going to affect different species in different ways. We know that there's traits that are going to probably be important for different species of whales to make it

through the age of humans. That includes having a broad geographic range, probably not being too big, or too small. Having a broad diet is probably pretty important.

HS: And for those of us keeping score at home, a broad geographic range, medium size and flexible diet that basically describes our good friend, the gray whale!

NP: They're probably going to be the winners in planet Earth in the age of the humans. But it's not going to be just this wild success story. They have to live alongside us. The consequences for whales for an ice-free Arctic are probably not so bad: increased biological productivity with less ice, more sunlight. But you can bet the humans are also going to use those freeways too.

HS: So for gray whales, climate change might not be such a big deal.

HS: So, let's say a gray whale that has trawled up and down the Pacific coast gets curious and ventures into the newly ice-free Arctic. She might think, "Woah. A whole new ocean. Let's check it out." Our curious whale finds a lot of fish and a relatively uncrowded environment -- at least for now. And then, suppose that whale keeps going. This curious gray whale might soon find themselves in another entire ocean, that currently has no gray whales in it. There were Atlantic gray whales centuries ago but it's thought that they might have been some of the earliest casualties of whale hunting.

HS: This little hypothetical might seem a bit fanciful. A nice "what if." Until you find out that it's already happened.

NP: Gray whales have now been spotted in the Atlantic, actually in the Mediterranean. There was a little lost gray whale that was spotted in 2012. And then two years later another gray whales spotted off the coast of Namibia. Different gray whale.

HS: So think about that. Two separate whales swam thousands of miles out of their way into an ocean they hadn't been in in centuries. And those are just the two we've seen. It's entirely possible that others have made that journey.

NP: Maybe that's not so crazy if you routinely migrate 10 thousand miles. I mean those are huge, huge, vast numbers for us. So, you know, some biologists would say, well these are just little lost whales. But the most likely route that they got there was through an ice-free Northwest Passage in the Canadian Arctic. So it will not be surprising to me -- and I write about this in the book -- if we see more and more gray whales. And at a certain point -- in the next 50 or 100 years, gray whales might come back and recolonize the Atlantic. Might not be so surprising to see them off our own Atlantic seaboard.

HS: And so, there are a million things we should worry about in the age of climate change. All science is very clear that things have been changing. And sudden change is bad for most species, which tend to adapt slowly. But maybe it's nice to think that at least for one species -- I'm talking about the medium sized gray whale that could -- it might just be OK.

HS: It reminds us that even when things seem daunting for nature, it takes passionate people who care about whales, like Remington Kellogg. And Nick Pyenson. And if there's any lesson to take from gray whales, it's that if you just leave the door open a crack, nature will sometimes surprise you and do what these whales have done for the past 50 million years: adapt, evolve and survive.

[OUTRO MUSIC]

HS: You've been listening to Sidedoor, a podcast from the Smithsonian with support from PRX.

HS: If you're curious about Nick Pyenson's book and learning more about whales, the title is, once again, "Spying on Whales: The Past, Present, and Future of Earth's Most Awesome Creatures." You can find it wherever you buy your books!

HS: While you can't visit Nick's whale garage, there are whale skeletons and even a life-sized model of a North Atlantic right whale that you can go see. It's at the National Museum of Natural History.

HS: Sidedoor is made possible by funding from the Secretary of the Smithsonian, as well as the Smithsonian National Board.

HS: And the Smithsonian is funded in part thanks to listeners like you.

HS: And if you've been enjoying Sidedoor, let other people know by writing a review in Apple Podcasts. Or give us a follow on Twitter. Our account is: at sidedoor pod.

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HS: I'm your host Haleema Shah. Thanks for listening.

[OUTRO MUSIC]