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“If Oceans Could Speak”

Episode 3 Transcript

Dr. Hannah Cubaynes and Dr Kim Goetz: The more you look, the more you see

[00:00:00] **Hannah:** You kind of feel like the little fly in the room where you get to see something that probably no one else has seen. It's kind of like, your let in a little secret.

[00:00:09] **Jennifer:** Hello, and welcome to another episode of If Oceans Could Speak, the podcast that listens to the oceans through the personal stories of those who share their life with the sea around them. As always, Stefan and I are going to be chatting to the people behind these unique stories and the hope that our conversations, not only intrigue, but inspire you to reflect upon your own individual connection to the ocean.

[00:00:32] **Stefan:** In this episode, we're delighted to be joined by two guests who are whale biologists, studying these mammals in the Arctic, both from space and on the ground. Dr. Hannah Cubaynes is a wildlife from space research associate at the British Antarctic survey and WWF. Dr. Kimberly Goetz, wildlife biologist at NOAA in the United States specialising in the area of study of the endangered Cook inland population of beluga whales. Together, Hannah and Kim collaborate on a project that aims to automate the detection of wildlife using satellite imagery in order to inform conservation.

[00:01:08] **Jennifer:** Welcome to you both.

[00:01:11] **Hannah:** Thanks to all of you guys for having us. This is very nice to be able to talk about this project we have with Kim and others.

[00:01:19] **Jennifer:** So I'm really excited to be talking to two whale biologists, I think that's really cool. And I think lots of people will be wondering what first inspired you for your love for the ocean and what drew you to investigate the Arctic Ocean in particular.





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[00:01:36] **Hannah:** Yeah. What inspired me to study the ocean and kind of started, not the way you would think, because I used to be super scared of the ocean. I used to not be able to go on a boat when I was six, seven years old and I had to wait maybe a few more years until I read something about dolphins and then was asked at school to do a small exposé on an animal of my choice so I thought, I'll try dolphins. And then I found so much more about them, that I liked, that I wanted to know more about them. So then I studied, wanted to have a read more about whales, and then I was quite lucky that I got to go and see them in the Mediterranean, because I'm from Southern France. So that was the closest place to try and see them. And, my first trip, didn't see a single dolphin or a single whale, but I was very much made aware of all the problems they were facing, such as entanglement in fishing gear. I was told about those from also ship strikes. I'll never forget, we were on a small sailboat and we had to stop to let the massive ferry pass by us, so we wouldn't get crushed. And I thought, how are the whales meant to know this? Like how are the whales meant to know that they should hold on for a big ship to come? So then, because of that, I really wanted to then do more marine conservation and protection. So that was the reason why I went towards the ocean. Then the Arctic, I mean, I've heard of it. And I was always fascinated by this remote region and the Inuit culture, but then with the satellite project, it came about because the belugas might be easy to spot. So we thought we would try. And so that's kind of how my story with the Arctic is starting, because I feel like I'm at the beginning of it, so yeah, that'd be it for me, I think.

[00:03:20] **Kim:** Yeah. I also have kind of a bizarre, not traditional way maybe. I grew up in Colorado, so a bit of a problem, as you might know, there's no ocean, not even close. So I didn't actually see the ocean until I was probably eight or nine. I was just always fascinated by the ocean itself, I just felt like it was something that made you still feel very small in this world, that's so busy and it's so mysterious. And it just, I don't know, it was this feeling of nature, kind of thing. And I, you know, I really, I just fell in love with it. I didn't really have a way to do much about that, given that I lived in Colorado. And as an undergrad, like when I, I got to the point of going to college, there's no way I could afford, I paid for college, so there's no way I was going to be able to afford to go anywhere out of state for me. And so I got just a degree in biology and I was able to take a class my senior year in college, on, it was Marine ecology, but it was a diving class. So we went to Mexico and, you know, we learned all about the coral reefs and, we went to Mexico and just dove for two weeks and it was just another thing that I was like, wow, I really, really love the





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ocean. And it's just such a unique thing and feels so peaceful underneath the water. And I was just really fascinated by it. And then, you know, still struggled to get out of state. And so then I worked in Costa Rica for a while after college. I was an entomologist, so I actually worked with insects for a long time. And I really, you know, I'm, I'm kind of a person that I'm really interested in conservation and movement, movement and behavior of everything from, insects to, you know, whales, to a lot of things. And, you know, I, I kind of realized, I was like, well, this is, I like the insects, but it's not, it just didn't feel like I was really connected to what I wanted to work on. And so, when I went back to school for my master's, I ended up in a lab that was really up my alley in conservation management. And so they asked me to do like a internship between the two years of my master's and I came out to the Marine mammal lab and started getting some data for them, for a project that my advisor was working on. And I asked him, I'm like, can I take your beluga data, and can I do my masters on it? And that's what I did. I did a, it was basically a habitat model and figuring out where the animals are going, why they're going there. And then they asked me to come back after my masters to just do the aerial survey and see like, this is how it's done, and you know, they, I think they guaranteed me like three weeks of work or something. And I ended up there for much longer than that. They, they, you know, kept me on and then I still left, did my PhD actually in Antarctica. And then, ended up still contracting and coming back, and now I'm still working on belugas, gosh, I don't even know, I guess I started in 2005, so quite, quite a long time later. And yeah, the Arctic just sort of came about because of working the way my, the work came and working with belugas and that. I worked for a long time with bowhead whales as well. So I spent a lot of time in Barrow and Dead Horse and a lot of very remote places. So, yeah, that's kind of my story.

[00:06:22] **Stefan:** Thanks. When you both study Marine mammals, they are often seen as really this charismatic megafauna, but there so much more than that, especially for the communities in the Arctic. Hannah, can you tell our listeners why it is important that we studied marine mammals?

[00:06:42] **Hannah:** Yeah, that's a good question because I feel like a lot of us start loving whales or wanting to study whales because they are charismatic, and then you found out how important they are for a marine ecosystem, because whales, are those, I guess, massive ecosystem engineers. Because they're going to feed at certain depth and certain latitudes and they're going to travel back to the surface, or travel to other latitude and they're going to poo, and they're going





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to kind of redistribute nutrients that other animals in the sea are going to need. So that is a big part whales do play. Then there is also another, I guess it's a bit gruesome, not necessarily gruesome, but a bit more sad, but also very useful for the ecosystem is that whales will die, like everyone else, but when they do they can either strand on the beach, but a lot of them will also like fall to the bottom of the ocean. And when they're there, then you're going to have a new sort of ecosystem feeding on them and benefiting from it. You get to provide nutrients and then sequester some of the carbon dioxide that we know is playing a big role in climate change. So yes you could see whales as, I guess, helping us sequester carbons from the atmosphere into the ocean. Would you have anything else to add, Kim?

[00:08:09] **Kim:** It's a good question, because you know exactly, like you said, we start studying animals of, you know, they're charismatic, but, I think another, one other thing is just that they're, you know, they can be definitely a sentinel for what's going on in the environment. And, you know, for example, blue whales that have such a short chain, you know, there's upwelling and the upwelling causes, you know, nutrients and zooplankton, and then the whales feed off that. So, you know, once there's climate change impacts that start impacting that, then you see the result in the whales and sometimes you wouldn't, you won't necessarily see it, you know, until you see what's going on with the whale. So they can be an indicator of what's going on with the environment.

[00:08:47] **Jennifer:** Thanks. Yeah, that's true. I remember learning about whales doing these great migrations from tropical places up to the Arctic. But, I forgot that they also are really important for the deep sea, so that's great. Just shows that their influence is so far reaching, isn't it.

[00:09:02] **Kim:** Just add one other point is that, you know, we, there was recently a couple of papers that came out where, you know, we start seeing these species in areas that we don't normally see them. So they're, you know, with the climate change, they're kind of moving north. So the more we see, you know, different species further north that we don't normally see is also a really good indicator of climate change as well.

[00:09:22] **Jennifer:** Yeah, and on that, why, why would you say the Arctic seems to be a very important place for so many Marine mammal species? When I think of it, there are walrus, different whales, polar bears, seals. It seems like





they're all sort of drawn to the Arctic somehow. Can you say a bit about why that is and what challenges they're facing now?

[00:09:42] **Kim:** I'm sure. Yeah. It's um, there's, you know, it's definitely a diversity hotspot. A lot of these high latitude areas are just because they're so, you know, with the ocean circulation, there are so many nutrients and, and such in the area. So it's just a very productive area. And with this productivity obviously comes the food that they need and so, it draws, you know, there's a lot of animals that rely on that area. You know with climate change, you can see the results there a lot stronger than maybe other places where you have animals that are just going north where they don't normally go that far north. And so because of that, you know, that changes interactions with other animals that normally are there, right? So that's competition for food, that's, you know, habitat use, different, different things that's going on there. And then, you know, you have a lot of things too, with the reduction in sea ice where, animals are behaving differently. You know, like we've seen walrus that normally haul out on sea ice and we see, oh, there's 30,000 animals suddenly on land and they're behaving very differently. You know, that creates a lot of other issues with, you know, things being hunted and just creates a very different atmosphere. And there's, you know, there's situations where if they can't, if certain animals can't get out onto the ice, you know, like polar bears and such, they can't get to an area where their food normally is and it is because they're stuck on land and it's too far for them to get to. And so there's definitely a lot of different issues there going on with climate change.

[00:11:08] **Jennifer:** Yeah, thanks, and you specifically studied the Cook Inlet beluga population through, you mentioned, aerial surveys, such as drones, which sounds amazing. And I was just wondering if you could give an idea of what typical day in the field might look like for you doing that?

[00:11:23] **Kim:** Yeah, we do both, aerial surveys in a manned aircraft. You know, as you can imagine, it's very challenging to do, and there's always inherent dangerous flying in a very small aircraft at very low altitude. So we started the drone project and it's really, it's really cool, it's really different. Being on the water with the animals is very different and a really neat experience, you know. A typical day, it's very challenging and Cook Inlet has the top, I think it's the number two most dynamic tidal cycle in the world next to the Bay of Fundy. So you get, you know, a 30 foot difference in the tidal cycle daily. And unfortunately, the one area where we can actually put the boat in does not have a





floating dock. It's just a stationary dock. And so what that means is there's a good chunk of the day where there's basically no water to launch a boat. So we have to wait till though the water's high to launch the boat and be very careful about what we're doing, because if we make the wrong call and go out on a sub-par, you know, weather where it's going to turn, we're stuck there. We're stuck out for many, many hours until the water gets back in. So we launch, we launch on high tide, and then we try to work with the animals on low tide because they aggregate together in groups, because they, what they want to do is they want to get up onto these mudflats and get into the rivers where they can trap salmon and, and do their whole, you know, they can have a whole feeding thing on, on salmon when the runs are going in. So they just hang out at the edge of these mudflats until it gets deep enough for them to get into the deeper water. So at that time we can go up to them and then we can launch our drone and get some really good aerial photographs of them that we can later on use for things like marker capture, where we can get eventually a population abundance estimate, using that method rather than the aerial survey. And it'll likely be a lot more, a lot easier of a method. And then we can use that also for measuring the animal. The water is so dark that we can't actually measure the entire animal, like a lot of people do. So we just measure, you know, from the blow hole to the dorsal fin, and we can get an idea of size class in the population. And then we also use, like, we also look at the color because the belugas are born dark, very dark, even though they're white as adults. And so we can get an idea of, you know, with all the different methods that we're doing with trying to figure out age, we can get an idea of like how much the color is corresponding with how old the animal is.

[00:13:54] **Stefan:** And do you see changes in the population numbers of the Belugas?

[00:13:58] **Kim:** The Cook Inlet beluga is very isolated, so it doesn't migrate like some of the other species or other populations of belugas. They stay in the Cook Inlet region. They like to be up north near the Anchorage area. And then the salmon runs are there in the summer.

[00:14:14] And then when the winter approaches, the sea ice comes in and it pushes them South. And then they kind of stay a little bit south in Cook Inlet, but they're still not leaving the inlet. So because of that, they're very genetically isolated and physically isolated. So they're, they're quite different, genetically, from the other populations of belugas. Their numbers have been decreasing back in the seventies, we estimate around 1,012 hundred animals or so, and then that



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has just continued to decline. There was a hunting for a while that was, that caused the population decline, but that has, that stopped, you know, quite a long time ago and the population started rising. And then something happened in the last decade where they just haven't been able to recover, for some reason. We are working on why that is, it's a bit of a mystery. Now, it seems that they're in a bit of a decline now. So it used to be looking pretty stable, just not really recovering. And now it's starting to decrease again and we don't know why it could be related to climate change, could be related to the fish runs. The fish, you know, there's obviously, quite a bit of fishing for salmon. We don't know if, you know, maybe they're not getting enough salmon, because they kind of fast during the winners, what we think. They're opportunistic feeders on various things, but the salmon runs aren't there. So they really rely on these salmon runs and the spring and summer to really sustain themselves for a lot of the year. And so we think it could be, maybe they're not getting the same type of nutrition or the same type of runs. So we don't, it's a bit of a mystery, and that's something that is sort of a race to figure this out while we can while there's enough animal.

[00:15:56] **Jennifer:** Thank you. I really hope you can figure out what's going on. Perhaps that's where Hannah comes in. Hannah, you're a part of the wildlife from space team at the British Antarctic Survey who have been at the forefront of trying to address the challenges of studying cetaceans like belugas using satellites. I was wondering if you could tell us a little bit more about how exactly a satellite can help study these animals. It seems quite remarkable that an image from space could capture a single whale in the ocean.

[00:16:28] **Hannah:** Yeah, that is pretty crazy. I'll never forget trying to find whales from space when I was like. I don't know, 12, having a look on Google Earth, finding nothing. And then 12, 15 years later, you find out that someone's done it and it's possible. So it is pretty amazing. But it's still a very, very new method. So we're still discovering what we can and can't do. The thing that we know for sure is that with satellites, we can get data about places where we've never been before or places that are just too difficult to go there often enough. And if you think of the Arctic, the habitat, the place there is changing so fast that you would want to do surveys more often than you can. And this is where satellites could come in and be really helpful, help us to more regular surveys. But it's not going to replace any of the other methods we currently use. It'll be more in combination. It's more like a new tool.





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[00:17:28] **Jennifer:** That's really cool. I'm trying to imagine what it must be like a typical working day for you might be very different from Kim's. I guess I imagined Kim going out on the boat and having these daily interactions with, with the animals, with these beluga whales. But you will be having all of this interaction just on your screen, through the technology, looking at these satellite images. And I guess on one hand that might make you feel more connected to the animals because you're seeing them on a daily basis, and getting to see places and maybe interactions that no one else gets to see, but also it might make you feel less connected to the Arctic because you're not out there sensing it on the ground as Kim is. And I just wondered how connected to the Arctic do you feel when you look at all of these images?

[00:18:17] **Hannah:** I think you kind of nailed it because when you scan, you spend days and days scanning through the same images, you get a feel for the area, you certainly, like, get used to it. And it's kind of weird because I've had that feeling, not necessarily for the belugas because there are smaller images I was scanning, but lately I have been looking at a lot more images for walrus, and I've never been to many of those places in the Arctic, and suddenly you start to build a feeling for them. Oh, you can know whether it's in Russia or in the US you get a bit of an understanding, and I do like this. Maybe one thing that's helping, also is because I've seen the animals before, because I used to be a marine mammal observer on offshore surveys, to make sure whales were treated in the best way possible. So I feel like I've seen whales and dolphins. Not as much as I want, I would love to see them everyday if I could, but I've seen enough of them, that I get, if I see an image, I kind of get an understanding. And it's also, you kind of feel like the little fly in the room where you get to see something that probably no one else seen, it's kind of like, your let in on a little secret. Especially with belugas, when you get to see them on satellite images, and you just to give you an idea, because it won't look as good as yeah, when you're on a boat or from a plane, but just seeing this - I know it looks to me like just grains of rice, like stuck in the water. You kind of wonder what's going on there, so you have questions, but then on the other hand, yeah, you don't necessarily feel as connected because you're not on the water and really seeing their behavior and how they're reacting. But I still, I still find it so exciting. Every time I get to be given a new image to go through, I'm just like, why am I going to see it this time? Cause you just don't know what you're going to see.

[00:19:57] **Stefan:** That's great to actually hear how it's, you refer to yourself as exciting. To have this connection, even at this huge distances, I think that's a





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very inspiring way also to look at nature and also a reminder that we can connect to nature also different ways. And what goes through your mind when you see these images? Is that a thing which most people will never get to see, not even on a picture. Is there anything where we would say this is something that is particularly special about this?

[00:20:31] **Hannah:** Yeah. I mean, maybe one thing I want to say first is anyone could actually see belugas from space if they were to go to Google Earth. If you're willing to spend some time looking for them, or if you know some places that we know they're there, for sure, you could actually have a go and spy on whales, if you wanted. Like I was saying for me first, it's just excitement of what am I going to see. At the beginning, beginning of starting to look at satellite images to find whales was "am I going to see anything", "how are they going to look like?" And so the first time you see one, you kind of have that excitement and then kind of excited every time you find one. Because I guess it depends on the project, you never know if it's going to be the day they're going to be in the bay or the area you took the images of. And then with the belugas, I guess I got a bit intrigued, because one thing I saw, but I'm not sure how much this is true, is in the images that would still have a bit of ice, I could see belugas in the bay. But then there was this one image of 2016. And you could see that the whole ice had melted even on the outside of the bay and that we were not a single beluga in that one. So I kind of wonder, is this just normal? They just went somewhere else, because then the other images you could see the belugas were inside the bay, but you could see groups, that seem to be traveling up north. So then you start wondering, oh, is this just part of their summer migration, where they just stopped with a bay a bit more south and as the ice melted, they just keep going up north and up north. So you see things that you didn't expect to see and, yeah, you wonder. Because, initially, I'm working on this more to figure out whether the method can be applied and whether we can count them and how confident we can be in counting them and how efficient we can be. And that's the project with Kim: It's can we detect them automatically, because that would save us a hell of a lot of time and allow us to do it a lot more than we can currently do. But ultimately the big dream, the ideal would be being able to use satellite images to do more than counting and try to answer those storyline of what's going on in the Arctic and with belugas. I mean, some people have worked on this and have questions, but I feel like there's still places where we wish we could get more data and fill up the gaps in the stories.





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[00:22:49] **Stefan:** You just mentioned the projects you've been working on together with Kim, how do your two types of data, satellite data and the field data, how do they compliment each other? How do you use them together?

[00:23:02] **Hannah:** So, especially at this stage, when we still want to know whether, what we see in the image is a beluga, and be sure about our identification on the satellite images. Using aerial images, like taken from a plane or a UAV, to confirm what we're seeing is a beluga, because in remote sensing, usually, when you look at something on a satellite image, such as trees or buildings, you can then go into field yourself with your GPS and make sure that what you're seeing is a tree or what species of tree you're seeing, or, if you're on the road or a building. But whales move and the images we use are either archived ones or images we've asked to get collected. But because of that, we have to wait before, like a few days, before we know that it's been collected and we have to give a time window, we just never really know when we going to get to time it exactly, with someone being on a boat to tell us what we're seeing. So yeah, using all of the aerial and data that Kim collects, is helping ground truth all the observations we have in satellites. And then ultimately also satellite can just help us figure out the best timing to go out on a boat or a plane and where to go. You said, I knew, we found a new place where the belugas are going, then, you know, you can set up a field work and expedition there and you'll know the best timing. But I guess as the Arctic is changing that's going to be a bit difficult.

[00:24:26] **Kim:** It's also really useful with COVID, you know, this is a very endangered population, there's less than 300 animals. And so, you know, the survey, the aerial survey that we do and to get our abundance estimate currently is really important because it's declining and it's an endangered population. So the longer that we can't get up there to do another survey, we don't know what's going on, we can't, you know. So there's kind of, you know, with COVID it was really nice way to be like: let's start this, let's find this tool that we can do. And, you know, a situation where we, we may not be able to get up there. And then, you know, especially in the winter, like, we have no idea. We, I mean, we have opportunistic sightings where people have seen these animals in certain bays down south, and we have some information back when there were over a thousand animals that they use some of these areas, but where are these animals once they leave the Northern area, where they go, we don't have a real good understanding of that. And so for us to especially know what's going on in the winter, we need as much information as possible, if we're going to try to turn the





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trajectory around on this endangered population. So it's just another really, really useful tool at our disposal that, you know, we can, we can use to, try to make a difference.

[00:25:38] **Jennifer:** So it's sensing the environment remotely using technology. Is this a way forward for Marine science? And do you think that this is going to become an ever more popular way of getting the surveys done?

[00:25:52] **Kim:** It's not necessarily going to be a replacement for other traditional or other methods. It's I think gonna be a huge, you know, filling in the gaps and it's gonna, you know, it's gonna be a huge help. It's obviously trickier with whales, because they're underwater, so there's so much we can do, but you know, it's the same thing with aerial surveys, right? We have to have an animal, for example, tagged where we know how long it's spending underwater so that we can then combine that. We can say, okay, we correct our data. And we say, this is what we see. We correct it for animals underwater. You know, satellite data is tricky because, I think this is a really novel and important tool that is becoming much, much more popular for animals across the globe for this kind of thing. But the challenge is, you know, a lot of people think that, oh, we can go into all the data that's already been archived and we have this whole thing there and we can just study every animal under the sun. And that's not quite the case, at least not for whales because when these satellites traditionally go over water, they turn off. So it's, there's not really the data there that would be for like, you know, an airport or military base, for example, where they're monitoring it very closely. And, you know, we're also dealing with competing projects or other areas of interests, like national security. So, you know, if your population like Cook Inlet beluga is next to like three different airports or whatever, you know, it's hard because, all the tasking that we put in as scientists is typically a low priority. So if there's other things in the area that are competing with that, it can be challenging. So, but that being said, getting any of this information is really important. So it definitely has a huge asset. I think that's where things are moving. You know, as this hasn't traditionally been used as that. So I think as contracts with the satellite company get renegotiated and this becomes more to the forefront, I think there'll be more images available. And I think things will change where it might be more of a priority.

[00:27:56] **Jennifer:** What would you say to someone who perhaps doesn't yet understand the value of protecting the Arctic ocean or protecting the wildlife





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within it? Do you have any thoughts on if someone asks you, what do we stand to lose from this changing environment and changing wildlife?

[00:28:11] **Kim:** You know, I think it's definitely a challenging question, especially, I feel like so much of people's perspectives can often change once they see what's going on. For example, you know, we all hear climate changes is stated all the time. Right. And we know it's happening, but I feel like it's very different when you actually see some of the things, you know, when you, when you go up, you know, I know in 2007, I'll never forget when we went up to do some surveys and it was the first time the Northwest passage was open. And, you know, the first time a cruise ship comes through there where, you know, that's never happened before. And you know, when you see polar bears swimming in the middle of nowhere, or you see walrus hauled out on land that shouldn't happen. Even as a scientist where I know this happens, actually seeing, I think some of this just kinda hits home in a different way, but I think that's really hard obviously for people that aren't scientists and aren't getting up to that area. So, you know, having information out there with media and videos and documentaries and stuff like that definitely helps, but it is, it is challenging. And one of the things that people may not care so much about, like, "what does it matter if this one whale species...? - there's plenty of other whale species or whatever", but, you know, you have to kind of look at the bigger picture and the role that they play, right? So, you know, climate change has a lot of effects, it can shut down ocean circulation. You know, we have the warm water from the equator going up to the high latitudes, making very productive water. And once that water cools, it sinks, becomes dense and it circulates, you know, it's the ocean's conveyor belt. If you shut that down, like you're going to be in trouble. That's not just going to be one whale species disappearing, you know? It's a huge impact. And I guess, you know, it's sometimes challenging when people don't necessarily see it right in front of them and it might not be till the next generation, but, you know, if, if people care about what their future generations are going to experience, I mean, this is a really serious thing. This isn't, you know, 20 generations down the line, like we're doing a really good job at speeding this up. And so overall we, you know, as a society, we need to be cognisant of trying to reduce our, you know, our reliance on fossil fuels cause really that's what's going to need to happen.

[00:30:27] **Hannah:** Just going back, I guess to the first question, what have we got to lose? Yeah, we are losing whales? But then when we know the place they have in the ecosystem, we're just going to change the ecosystem, at some point,





because of this new ecosystem, we'll have to change our lives. We'll be forced to.

[00:30:42] **Stefan:** And if I can pick up right there, what do you think has to change in order to protect marine mammals better?

[00:30:49] **Kim:** I think for Marine mammals, you know, there's quite a few things that come up. I mean, there's obviously, as we just said with climate change and, you know, that's a much more complex question in terms of reliance on fossil fuels, but, in other things is, you know, we have just in the grander scale, there's a lot of issues with entanglements in fishing gear, there's, you know, ship strikes. So it's particularly a problem with certain species, you know, for the endangered North Atlantic right whale, they are trying to make modifications and making, you know, like ropeless gear and changing speed limits for example of vessels. And, you know, there's going to have to be a lot of modifications and there has to be a lot of effort, and it, you know, it does come with an expense and it is challenging, you know, so for example, when climate change, whales might change their migratory or their, their path of which they're going and now they're being hit again, right? You spend all that money to change the shipping lane or to change where the speed limit is and then they shift. And so it's, I think the key for a lot of this is dynamic management, but dynamic management is also really tricky because it is expensive. It does require a lot of work and effort. But I mean, personally I think dynamic management is gonna have to be the way forward.

[00:32:02] **Hannah:** Yeah, and then I was just going to say more about the Arctic: when you mentioned earlier that the north passage is now open, that means more boats, so more noise. And we know that can impact whales as well because they can't necessarily communicate or find their food. And then it's going to be more ship strikes as well. So suddenly the Arctic changing is bringing all those threats that other whale species are encountering, to them. Because bowheads stay there all year round, belugas as well and most of them. So it's all that is bringing because, because of us, and they didn't ask for it, we did it to them.

[00:32:33] **Stefan:** So a lot of the problems that we already have elsewhere, we are now bringing up north up to the Arctic. And thanks for bringing the Arctic a bit closer to our listeners. Finally, if there's one thought, one idea about the Arctic that you'd like to share, would there be anything we would say, this is so





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important, this is something everybody has to know about the Arctic, the Arctic Ocean in particular?

[00:32:57] **Hannah:** It would not necessarily be about what they can know is not what it could do. I feel like anyone could actually help science. We haven't really mentioned that project because it's in the planning and it should happen in October, November. But with the WWF and the British Antarctic Survey, we're preparing a campaign where anyone will be able to help us collect the data we need about walrus, to figure out what's going on. Because we mentioned before, with the ice melting is changing the habitat. So they used to come on land, but now that more of them are coming on land and we don't really have a good baseline of their numbers. So we're going to be asking people to help us find them and count them. And this is really useful for science because without all those people that help us count, we won't be able to collect the data on time, to then get the information we need to be able to improve our conservation planning.

[00:33:47] **Kim:** Yeah. That's a really good point. And Hannah is right, that amount of data that you have to go through with the satellite images. I mean, these satellite images are pretty huge, and so trying to get the data in a timely manner is challenging because, you know, we don't have time to go through that amount of data. So, you know, it really does take a village. And so, you know, and that, that gets to the crowdsourcing. And that's something that with the project that we're working on with Hannah as well, is we're hoping to set up right now a platform as well that will be not for a few months yet, but similarly, as she's saying, you know, for beluga whales, for sure. And before you can even train models to automatically detect whales as a first step to that, you need annotation, to show where the locations are so that you can put it in a model and be like: hey, now use all these characteristics of these sightings to build something that we can now automatically detect the animals. So finding the animals is just, it's a huge precursor to how this is going to move forward. And as Hannah said, it's like, we need to rely on other people. So any people that may not even be able to get to the area they can, as Hannah said, be a fly on the wall and you can see things that we'll never see on the water. Having people help and go through those images, you know, it's a huge help and hopefully like, it'll move the science forward, but also give people maybe a sense of ownership and seeing what those environments are like.





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[00:35:11] **Jennifer:** Well, thanks, that sounds great. It's a really good call to action, I think for everyone listening. So I think we'll leave it there for today, so thank you so much again for joining us, Hannah and Kim. It's been really great to hear about your experiences on the ground and through the screen, but also it's been so nice to hear that the technology doesn't take away that excitement and passion that you get from spotting a whale and seeing it in its natural habitat. So thank you so much. This has been really great speaking to you today.

[00:35:38] **Kim:** Thanks for having us.

[00:35:40] **Hannah:** Thank you for the invite, it was really fun.

[00:35:43] **Jennifer:** Search "WWF, walrus from space" for more information on how you can help spy on the walrus. If you liked this episode, please leave us a rating on whichever listening platform you're using. And if you would like to share your own ocean stories, connect with us using the hashtag #IfOceansCouldSpeak". This podcast was brought to you by members of the EU4Ocean initiative and was made by the "If Oceans Could Speak" Production Team, led by Penny Clarke, co-organized by Arne Riedel and Anna Saito and presented by Stefan Kirchner and me, Jen Freer. From all of us: Thank you for listening!

