

GOOD NATURED S2-EP3

TOM HART



**GOOD
NATURED**
A PODCAST SERIES FROM
CONSERVATION OPTIMISM

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INTRO

Julia: Welcome to Good-Natured, a podcast where you can join us for uplifting chats that shine a light on conservation challenges.

Sofia: We interview inspiring conservationists from many different backgrounds and they each engage with conservation in their own way.

Julia: I'm Julia.

Sofia: And I'm Sofia!

Julia: We're thrilled to have Tom Hart on the podcast today.

Sofia: Get ready to hear about being a penguinologist using technology for conservation and creating a home away from home.

Julia: Hey Sofia.

Sofia: Hi Julia!

Julia: Today we're thrilled to have Dr. Tom Hart as a guest. Tom is a Research Fellow at the Department of Zoology at the University of Oxford and he is known as a penguinologist, which means he studies penguins and also seabirds in general.

Sofia: I'm particularly excited to talk to Tom because I have seen him several times wandering the halls of the Department of Zoology here in Oxford, carrying around loads of exciting cases and tech as he was getting ready to go off on one of his expeditions.

Julia: That's always very exciting seeing people going places with lots of exciting tech and equipment. I think another really cool thing as well that Tom works on is citizen science. So on the citizen science platform Zooniverse they have Penguin Watch and Seabird Watch that are like two platforms where basically anyone out there can count penguins, chicks, and eggs and help Tom and his team find out more about how climate

change is impacting on the different species of penguins and seabirds. So really cool stuff as well and I can't wait to hear more about that.

Sofia: Let's hear from Tom.

INTERVIEW

Sofia: Tom, thank you so much for joining us on the podcast.

Tom: Welcome, nice to be here!

Sofia: **We're so excited to talk to you. So I think that you have one of the best self-titled jobs on the planet, potentially. One of your interviews with the BBC went viral because of your job title, penguinologist. Can you tell us what led you on this unique path?**

Tom: Well, it's half joking, half deliberate. I'm not the only one, certainly that I found referenced to in a couple of books, but the whole point was, yes, it's jokey. It's certainly not dismissive. The point is that I study penguins. When you say you're a penguinologist, people laugh and then ask about it. So it's a very transparent way of describing what you do.

Sofia: **Definitely! So can you tell us a little bit about what you do and how this relates to your work as a conservationist?**

Tom: Well my job is really half ecology and half conservation. So I do fundamental research into penguin populations with a strong conservation bent. The thing is it needs to be fundamental research because there are gaps in our knowledge that are very relevant to conservation. So in particular, when we look at different penguin populations within a species they're increasing or declining within a species in different areas. So there's a lot of uncertainty of what is driving these changes on a local level. And that primarily is what I'm trying to figure out.

Sofia: **That makes a lot of sense. Could you please tell us about penguins? What are some of the biggest misconceptions you've encountered?**

Tom: One of the most commonly asked questions is: "is it true they fall over backwards and can't get up when aircraft go overhead?" And I think that is a myth from the Falklands War, but it's not true. I mean, you can certainly disturb and flush any seabird from nests if there are aircraft nearby but they don't fall over or anything like that.

Julia: **It's such a weird myth, I had never hear about that!**

Sofia: It just seems like a scene from a film. It's almost like a comedy thing. It's interesting just how these ideas of penguins maybe relate to real life.

Tom: Yeah, I mean, people project onto penguins more than almost any other species! And the more you get to know them, the more you see them. I mean, they're wonderful creatures but they are birds. You see them in the water and they are flocking the equivalent of flocks that you would see overhead but because they stand upright I think people anthropomorphise them. It's a shame cause it loses a lot of how amazing they are.

Sofia: And what threats are penguins facing in real life?

Tom: Climate change is a big one that is everywhere, but a local level it's far more fishing, direct human disturbance and also pollution, and those are spaced out. So obviously climate change is everywhere and is relatively, if you like, weak year to year, but is a global bogeyman that certainly can and has been shown to influence populations probably more as you get further south to the higher latitudes. Because fundamentally a difference of one degree makes a very distinct habitat change between ice and snow or sea ice and open water. So that makes a difference to everything from their prey to the breeding sites. I would say, and colleagues and I go back and forwards about this, there isn't really enough evidence as to the drivers or which is the greatest magnitude threat.

So the biggest threat is not clear yet, but fisheries is definitely on the list outside of Antarctica, that's a huge driver within Antarctica. It seems likely that certainly there there is increasing circumstantial evidence that penguins are declining, where they overlap with fisheries but it's not quite clear yet how much that is driven by fisheries or even whether that is driven or whether two things are driving both of them. That's relevant because for example, if you see a decline of sea ice, then of course you can get shipping into an area that you couldn't. So they're all related. We're not entirely sure which one is driving which yet.

Sofia: What are your hypotheses for the overlap in fisheries and penguin declines? Is it competition for food or is it disturbance? They're not directly fishing the penguins I imagine or does that happen as bycatch?

Tom: I don't think anywhere in the world there's incidents of bycatch of penguins. Certainly not in any appreciable numbers. Definitely not in Antarctica, within the Southern ocean. No I see it more as competition for food. It's a cost benefit analysis. And if you are fisher taking krill close to a penguin colony, then that could reduce not only the amount of prey, but the amount of prey within an easy foraging distance from the colony so that's the hypothesis.

Julia: Obviously, as you just mentioned, there's lots of threats and unknowns so I'm just wondering, in terms of the fact that a lot of penguin species are in decline, how do you manage to remain optimistic and to keep going with your work?

Tom: [laugh] I'm not entirely optimistic. I'm optimistic when I look at the sub-Antarctic in places like South Georgia, there's been a lot of work to remove some of the problems. So South Georgia has just completed a huge rats and rodent eradication, which has almost certainly led to quite a large bounce back in some of the flying seabirds.

We're seeing recovery in king penguins from a historic disturbance there. Probably a bit of overshoot because there aren't so many toothed whales competing for the fish that the king penguins feed on. So yeah, I have optimism in the sub-Antarctic in that even where there's a possibility that species like macaroni penguins might be declining in the sub-Antarctic that is probably a return to natural. In that in the last two centuries, most of the Antarctic fur seals were hunted to local extinction and those are coming back. So there's probably a rebalancing of krill predators there. So largely, I see improvement in the Sub-Antarctic.

There's also ever increasing control and mitigation of the fishing industry. So there's a large marine protected area around South Georgia and the South Sandwich Islands. That's the kind of thing when you look further south that we need more of. Where I'm a pessimist is the temperate areas of South America and South Africa. We see penguins in decline around those areas and in the Antarctic it's a bit more complicated. We see declines of Adelies and chinstraps in the peninsula area and gentoos slowly increasing. So we kind of see winners and losers that fit with either climate change or which ones are dependent on krill. It's a prey story, whether that's driven by climate change or fishing.

Julia: And actually that links quite well to another question that we had for you. So as you mentioned in your answer, you work both in Antarctica and in the Arctic and those are very remote areas with limited contact with other people. So could you tell us a bit more about, you know, what happens when you're in the field and how you cope out there?

Well, the way I do it it's not always limited by people. One of the potential threats, and also an opportunity, is tourism. Now we work with tourism where it's pretty closely controlled, but we actually get lifts on tour ships a lot of the time to get to the sites we want to, and if we can get to a site we need to study for even just three hours then that's enough to leave a time-lapse recording, sorry, a time-lapse camera recording for the rest of the year. It's probably enough to collect poo samples as well, which gives us disease and other stressors. And increasingly that's also enough to fly a drone and get an accurate survey of the population.

So a lot of the time I'm on ships, which is actually surrounded by other people. And then what we do with our programme is very occasionally we get dropped off if we need to study a site for longer than three hours. That might be camping or in a field hut between two, maybe four people so that's pretty remote. And we also collaborate with other scientists and every couple of years, we charter a yacht to go to areas where there's a big data gap to try and intensively study somewhere. For example, the South Sandwich

Islands, where very few people go. So yes, that's remote, but you're on a yacht with 10 other people. That's both remote and confined.

Sofia: The quality of the relationships must be quite different if you're spending so much time together?

Tom: Yeah. You very much have to pick your team. And we're lucky in that the longer we do this, the more we know that we have good team members that we can rely on in the field, but there's always new team members and different collaborations.

I think the honesty and flexibility is really key. And you can kind of set the tone on that at the beginning. It's absolutely key whether you're in a tent perhaps or in a yacht that everyone takes turns doing the washing up and things like that. And that they are seen too. The moment you get the feeling that there's a shirker of someone not pulling their weight, tension start building up and I've definitely got it right and got it wrong over the years and got some cautionary tales. But largely now I think I go on pretty happy expeditions.

You know, it can certainly be tiring but you go in with expectations and you actually talk about it quite a lot before you start and if you get those expectations and the right kind of attitude going in, they're usually pretty good. I think you indicated that, you know, if you do get on, not just do your work, if you do actually really get on with people in harsh environments, then those are some incredibly tight friendships you make.

Sofia: As you were mentioning, when you're out in the fields, you work in these harsh parts of the globe, which is so different from daily life in Oxford. What have you learned from life out that that can help us understand life closer to home?

Tom: Oh God. Great question! Like I say, I think the thing about communication and always doing your share of the washing up. I think friendships or relationships and things breaking up, if you always do little and often, tensions don't arise so much. Be that communication or, you know, doing your fair share and being seen to do it.

I increasingly blur fieldwork and home in that technology is quite a wonderful thing and you can take an e-reader into the field with a lot of books. You're not just limited to the books you can carry anymore. Same with music. So music and audio books and things like that, if you go to sleep at home, listening to an audio book, you can do that in the field, which makes it less stressful and more like real life.

I think the biggest thing I'll take from that is that, other than seeing friends, coming home is a bit of a disappointment and I increasingly love being out in the field and it's comfortable. So, if anything, I'd probably try and simplify this supposed real-world existence to be more similar to field work. I mean, real first world problem, but I miss the adventure this year. I definitely need to get out a bit more.

Sofia: Interesting! I think this year has changed so much for all of us and it's really interesting to hear you say that I suppose it's like the conditions are such that maybe small tensions get exacerbated. And so, you know, things get thrown into relief and patterns get thrown into relief in a way that maybe they wouldn't otherwise. So you sort of do that maintenance that is so important in daily life, but which out there can sort of really mean the difference between a great day or a terrible day or a successful experiment or an unsuccessful experiment.

Tom: Yeah, it's the human stuff that makes or breaks it. I mean, the environmental pressure is obvious. It's go outside, take communications, water, your survival gear, and do not die, but the do not dying, bit is make good decisions all the time. The human element of your teammates that's what makes it or doesn't make it enjoyable. So that's probably what experience has brought to it for me. I definitely still make mistakes but and on my side as well, like, you know, forgetting to do the washing up or putting it off, if you've had a bad day. It's so important.

Sofia: Don't worry. I think we all have those lapses, right? Like, I mean, no one can be perfect all the time.

Julia: **So that's really interesting actually, that you mentioned, you know, technology and how it can be so helpful as well in your previous answer. And obviously technology is a very important aspect of your work as well. I know you do a lot of things with very cool camera traps. I was wondering if you could tell us a bit more about your collaboration with tech experts and how it helps your conservation work.**

Tom: So one of the big premises of what I do is that if we can collect data on a much grander scale, then obviously we will get both the spatial and the temporal difference between species and populations. So what we do is we leave time-lapse cameras in place on every colony that we regularly get to, and they record roughly an image every hour. So we get time-lapse inference of what the colony is doing when and we can process that into survival of individual nests, etc.

And the link with tech is several folds. We have a big AI [Artificial Intelligence] collaboration on learning to recognise penguins within time series. We've had a huge citizen science component as well. And now it's starting to put those together. So if you go on penguinwatch.org, you can see the citizen science component. We serve up images to people and they click on every adult, every chick, and every egg and that has been informing the AI. The AI is now very good at detecting adults and poor at detecting chicks and eggs. So we're trying to mix and match they errors so that we put most things through the AI. Then we serve for the public, the citizen science side to do the bits that the AI is less good at.

So artificial intelligence is something that does a lot of work for you and that might be informed and trained or it might be unknown. It might be a computer learning how to do something. In our case what we're doing is we have collaborators so Andrew

Zisserman's group in engineering at Oxford have trained computers on how to recognise and locate penguins because they can do that a lot faster and they don't need to sleep. That's much easier to process a large amount of data. The other link is increasingly we're doing AI with drones as well, which is actually an easier problem.

The aerial photos are far more regular but we are increasingly looking at counting and recording the location of every nest in every colony. So not only can we count a colony between years and potentially within years, but we can look at the spatial structure of that. So the density and where we lose nests from either within a season or in contrast between the colonies that are stable or increasing in those that are declining.

Julia: And I was wondering if you could tell us a bit more about, so obviously you can't actually be in the field that frequently, but you have to leave the camera traps out there. So how does that work in terms of the technology, it has evolved a lot, hasn't it? So are the cameras now able to do some kind of really cool things that you could tell us a bit more about?

Tom: I mean, we're developing our own cameras. Particularly through a collaboration with ZSL [Zoological Society of London] with AI Davies [Alasdair Davies], but those are much more sophisticated. So those will be able to do more of the AI on the camera and make some decisions based on what they see. But largely the cameras we're using are incredibly low tech. They are time-lapse cameras that are usually used for hunters. But we buy relatively high-end versions of those that have really good housing and are robust.

I mean, the fact that you leave a camera taking a photo for every hour until you get back to it, that really isn't that advanced it's just can you put enough batteries in it. The tech on the data collection side has been pretty simple. We just do very bad things to good cameras.

Sofia: [laugh] So we have one last question for you, which is a question that we ask everyone who comes on the podcast. And that is, tell us about another conservationist who inspires you and why?

Tom: Oh I mean, one of them would definitely be Sally Poncet who pioneered a lot of the Southern ocean conservation and ecology before many people were thinking about it. She just drove a lot of Southern ocean projects forward, particularly on South Georgia. She's a bit of an unsung hero, I think, or famous in a very limited set of people.

Sofis: And what was it about her that you admired?

Tom: Her drive! Just drive to get stuff done when particularly some of the big things that people were ignoring. I mean, she was really a pioneer of the rat eradication project in South Georgia, which was regarded as too big to be possible for a long time.

Julia: I'll definitely do some research because I'm not familiar with the name. I'll have to go in and see more.

Tom: That's a true-ism of a lot of these. A lot of the local heroes are local. I mean, they just relatively quietly labouring away for a local problem and just really push on for that. So a lot of the heroes you can think of for conservation are not, they're certainly not big academics who try and come up with holistic or large scale stuff. It tends to be more people who have laboured away at a problem until it's fixed. And also get to know that problem at the scale at which they can make a difference. So you're not going to have a conservation hero that is a hero to everyone across the board, because I think the most impressive ones have been at a problem that you don't know about or at one site or one species or you know, one local ecosystem.

Julia: I love that though that that was a great answer.

Sofia: I think it's true as well that we all have a heroes kind of within all scopes in terms of, you know, the things that we're really interested in. We can really see the people who've made a difference or raise things up in a way that maybe other people don't immediately see, which is why it's important to name them and just sort of show their example.

Julia: Thank you so much for answering all our questions, Tom. That was a really interesting interview!

Tom: Cool. Thank you.

OUTRO

Julia: I feel like we learned so much about expeditions, but also about penguins and the weird myths that people link to them. I think one aspect that I thought was particularly thought-provoking was how Tom explained that he is trying to apply certain things that he learns on the expedition when he is on, on boat or research station to his normal life. And how, you know, there are certain aspects that sometimes you kind of forget about how in relationships, you need to think about doing things on both sides. You know, you need to remember that you have to do the dishes if you live with someone on an expedition. And I think the same applies to certain friendships as well.

Sofia: And yeah, I liked what he was saying about, about bringing those lessons back about how to maintain relations.

Julia: Another interesting thing was the fact that we often think of scientists going on an expedition and being, you know, on their own in Antarctica. And he was actually kind of like, well, this is not what we do. We actually hop on a boat, a tourism boat, and then that's how we get to places. And then we have a few hours to do what we need to do. You know, very often we think of the negative aspect of tourism or we think of it as ecotourism.

And I thought that was super interesting to hear about how in that case, the expedition was just you know, go on a boat with tourists and then hop into these different places. And then you also raise awareness about your work because you're stuck on a boat with tourists who are then I think probably quite excited to hear about your work and what you're doing with penguins. So, I just thought that was such an interesting outreach opportunity as well.

Sofia: Yeah, definitely a kind of marriage of convenience. One of the things that I thought was really interesting that he was talking about was about these complex interactions between humans and animals in conservation. How we might not actually be able to know what the biggest threat is or exactly how, maybe for example fishing is impacting these penguin populations. Like what the mechanism is in that correlation, which has been seen in terms of more fishing comes in, it has a negative impact on penguin populations, but not being entirely sure how or why that's happening.

Julia: That was really good of you as well to clarify in the episode and asking, you know, what was the correlation between these things. Because I think initially you listen to it and you're like, oh, are people fishing penguins? Is that what's happening? Are they bycatch? Like I had so many questions. So then when he explains that, actually, no, you know, it's just that then the fish is not there for the penguins to eat anymore. I was like, okay, that makes sense. But yeah, it's interesting sometimes what your brain kind of like jump into in terms of conclusion when you're given an information.

Sofia: And then also just the way that timescales can work in conservation and that some conservation efforts can lead to outcomes that you wouldn't expect. So, the way that he was saying that maybe macaroni populations are going down, but that's probably because fur seal conservation efforts are working. And so, you know, it's just about trying to understand what this ecosystem would have looked like historically. And potentially being okay with balancing these populations and watching how they interact over time.

Julia: It's interesting though, you know, what happens between scientists who work on different species and then one of them is doing really well. And then all the penguinologists are being like: oh, what do we do now? And then, you know, obviously the seal scientists are very happy that the populations are doing better. Conservation is all about balancing it out, isn't it?

Sofia: I mean, in the case of ecologists, I think that they usually have a very sort of broad ecosystem view. So I think that you might not get as attached to your particular species, but you probably, I mean, in your heart, you probably do. Don't you? I have a soft spot for sea stars and urchins and eels and all these species I've worked on. I get very emotionally impacted when I see something happening to them.

Julia: It's interesting what we project as well on these different species. And I thought the myth that Tom mentioned was so interesting because I had never heard of it. But then it's funny because I can see how misconceptions sometimes are in a very specific

context. I think what he said the context was in this case was the war, wasn't it? That they had lots of planes.

Sofia: The Falklands War.

Julia: So it's also interesting thinking how the, the sociological and historical context can shape what we project on to animals.

Sofia: Yeah, exactly. It was interesting again to see the reflection on sort of what a hero is, and especially a local conservation hero and the way that he described local heroes, as people who have laboured away at a problem until it's fixed and know that problem at the scale at which they can make a difference. I loved that because I think in conservation, being able to target the right problem is the key.

And then also understanding the context and being willing to kind of work on it until you see some progress. I loved that because you might see the headline about rat eradication in the South Sandwich Islands, but as a kind of lay person, or as somebody who doesn't really walk in the area, you probably wouldn't know what went into it. I didn't anyway! But when you're in that world, you see the process and you see the people who influenced that process. And it just seems really important to be able to raise them up and sort of show how that progress is achieved and how those goals come to be.

Julia: I also thought it was a really interesting the way that there was also a side of being humble. Like, you know, the fact that he was saying, well, you know, you wouldn't normally know about these local hero because they kind of like silently labouring away and making a difference in their own local context. And I thought it was interesting, the fact that, you know, you don't need to have the spotlight on you and everyone in the world to know what you're doing for it to be valuable and actually achieve impact.

Sofia: Yeah. It's not all about the visibility, Julia!

Julia: [laugh] Exactly. But this is becoming my favourite questions, Sofia, so I can't wait to hear what our other guests come up with because I think so far we've had fantastic answers. So yeah, you guys will have to tune in to hear other episodes and find out.

Sofia: Look forward to the next episode and we will speak to you again soon.

Julia: And as usual, if you want to review us our rate us or subscribe, or just tell a friend about the podcast that really helps people know that we exist. And again, you can reach us if you have any thoughts about this episode, if anything resonated with you, you can either send us a message on Twitter @ConservOptimism, or send us an email or a voice note at podcast@conservationoptimism.org.

Sofia: If you are a brave person and you send us a voice note, you might even find it gets featured on the podcast.

Julia: Send us your voice notes!

The Good Natured Podcast is hosted and produced by Sofia Castelló y Tickell and myself, Julia Migné. Our music is by Matthew Kemp and our transcripts are available thanks to the help of Alexandra Davis. This season of Good Natured is supported by the University of Oxford's Department of Public Engagement with Research Seed Fund, Synchronicity Earth, and the Whitley Fund for Nature.