

## Audio file

[Minisode #1 Danielle Nowosad.mp3](#)

## Transcript

Julia Macpherson (JM): Welcome to Arctic Minded, a podcast where we discuss life, work and research in the Arctic. Arctic Minded is produced by ArcticNet, a Network of Centres of Excellence of Canada, that brings together scientists, engineers and other professionals in the human health, natural and social sciences with partners from Inuit organizations, northern communities, federal and provincial agencies, as well as the private sector, to study the impacts of climate and socioeconomic change in the Canadian North. From coast to coast to coast, we recognize that our work reaches across the ancestral and unceded territories of all the Inuit, Métis, and First Nations people that call these lands home and have been protectors of and share connections with these lands since time immemorial.

JM: My name is Julia Macpherson. I am the Science Communications Coordinator at ArcticNet and your host for today's mini-sode with guest Danielle Nowosad. Dani is a Red River Métis-German interdisciplinary researcher, beadwork artist, photographer, dog mom, wife, daughter, niece, and cousin. She is currently working on her PhD at the University of Guelph in integrative biology, using DNA barcoding as a tool to understand biodiversity of freshwater invertebrates in the presence and risks associated with black flies on Inuit Nunangat - the Inuit homelands in Nunavut.

JM: On today's episode, Dani and I are going to discuss her experience in approaching the idea of incorporating SciQ into her graduate research. In case you missed the last Arctic Minded episode with Justin and Michael Milton from Ikaavik, SciQ is the combination of science and IQ, which stands for Inuit Qaujimajatuqangit. It represents the incorporation of not only Inuit knowledge but also Inuit values, customs and principles into research. In her academic journey, Dani has done exactly this, and is here today to tell us her story. So, Dani, first of all, welcome to Arctic Minded. I'm really excited to be talking with you today and even more excited that you are my very first guest on one of these mini-sodes, so welcome.

Danielle Nowosad (Dani) (DN): Thanks so much for having me. I'm so excited.

JM: We are super happy to be here. We also forgot to mention that you actually were involved with the ArcticNet Student Association for quite a few years, right?

DN: Three years, yeah. I was the English communications officer.

JM: Another way that we know each other, I guess. I think you were at the ASM last year, but I don't think we actually had the chance to talk.

DN: There's so many people, it's so hard to connect with everybody.

JM: Yeah, it was my first-time last year too, so it was super, super overwhelming, but it was amazing. So, let's start by talking about your journey into academia. I think that I read that you did your undergrad in geography. So, I think I was just wondering, were you always interested in continuing into graduate research or was there like a specific experience that made you realize that research is what you wanted to do?

DN: I love talking about this because I hated school so much and grad school was something that I heard about, and like mostly... I don't know, saw in, like, the media and stuff. Like, you'd hear about grad school, but for me that was such an incredibly foreign thing, and yeah, so I did my undergraduate program in physical geography and now I'm in biology, so there was quite a jump, first of all for me to consider grad school and then also to switch subjects. But, I was in my undergrad at the University of Winnipeg, and I started working in Churchill, Manitoba as a research technician for the field station there - the Churchill Northern Studies Center - and I'm still not fully sure how I snagged that job. I think it was really luck of the draw. I had no experience and at that point I was in, like, my 4th year of undergrad out of 6 total, and I was certain that I wasn't smart enough to finish a science degree and that was partially because I had people at the university telling me that I wasn't smart enough to do a science degree. And I had just failed a chemistry course, so I got to Churchill and I was like, I don't know what's going on, like, I don't have a background in science, I, at that point, didn't even own hiking boots and I ended up in Churchill and it was amazing. And I gained a lot of confidence and it was largely thanks to Dr. LeeAnn Fishback, who was the science director at the time and Dr. Nora Casson at U Winnipeg. They sort of had me doing a pilot study on nutrient uptake in tundra pond sediments and I did it, like, despite being told that I wasn't smart enough to be in science. I was there and I did it. So, the following year, I asked LeeAnn if I could come back to Churchill. She said definitely, and I ended up doing my honors thesis on that subject and I loved it. It was so fun. I loved doing the lab work. I loved doing the field work. And when I was working in Churchill, I was interacting really closely with non-scientists, like, all the time. That was a huge part of the job. And then, yeah, I decided, you know what, if I succeeded in this job and I did this honors thesis, who's to say that I can't go to grad school? So, I did and that's why I'm, like, in a PhD now, I guess.

JM: That's awesome. It's funny because I feel like my experience is actually really similar to that. I also in my undergrad... like, before I started university, nobody really talks about grad school. Like, I feel like you don't fully understand what it is until you are actually kind of seeing Masters students, like, as your TAs in labs and things like that. And yeah, I had the same impression that, like, I'm struggling in school, I'm never going to get into grad school, I'm never going to find, like, a supervisor who will take me on because my grades aren't the greatest and all you hear about is, oh, like, awards, you need to be doing this and have experience... and it's so stressful, but luckily, I found a great, great supervisor who was willing to... She actually said to me that grades don't, like, perpetuate, somebody's potential to be a researcher and that always stuck with me. So, shout out to her! So, it's nice that there are other people who had that same experience too. And look at you now doing a PhD and doing very, very well it seems. Just while we're talking about this, I think it's really interesting, like, the idea of the different kinds of relationships you have in grad school. Especially when you shift from, like, your undergrad into grad school because you see, kind of like, your professors more as people and as researchers, instead of people who are teaching you just lectures about things. And not only that, you also learn so much about yourself during this time, and one thing is, you know, how you're dealing with those new professional relationships that you've never encountered before. But also, about kind of why you're doing research and what it actually means to you to be a researcher and how you can apply all the skills that you have. So, I'm just wondering like has your idea of who you are as a researcher changed since you first started grad school?

DN: Yes, and not only that, but the way I understand what science is has also changed dramatically since I started grad school. So, as I mentioned, when I started work in Churchill, we were working so closely

with a huge variety of people, from grad students who were here to do their, like, Masters or PhD projects, to government scientists, profs, and then citizen scientists. We had volunteers from all over the world who were coming in, and I would lead groups into the field and they actually helped me with my honors thesis work. So, like, writing the protocols and then teaching non-scientists and leading them in the fields was an exceptional opportunity as an undergraduate student. And then I also didn't have great grades and I barely, barely got into grad school and I kind of had to convince the department that, even though I didn't have a background in biology, like, I've done all this experiential learning as a technician and I got in, and it was a huge learning curve to make up for not having a biology background. And I also think that gave me a very different perspective from people who had been in that stream since they first started. And then also, I started coming into my culture, the Red River Métis background. Like, that was never something that was prominent in my upbringing and I only started being more curious about it in my undergrad. So, I started learning more about that, but throughout my undergrad I never made a connection between that culture and science. Like, to me they were just two completely separate things. And, like, they kind of are in a lot of ways. But, as I did my Masters work and my PhD work, later on, I started to feel really weird about the way that I was doing it. And learning more about colonialism, and when 2020 hit and everything was happening with BLM in the States, like I started reading a lot more from Indigenous and Black authors. And then I realized how much I was perpetuating colonialism in the way that I was working. So certainly, my understanding of myself as a researcher, my role, the role of science, has changed dramatically in the last, like, four years or so.

JM: Well, honestly, I think that's refreshing because I think for a lot of people that's not the case and science for some is still looked at just one totally separate entity, even though, you know, especially in a field like Arctic science, I don't think that's how it should be perceived. So, something that I think is really cool that you have done are the different writing projects on top of your research, and specifically the piece that you wrote for Canadian Geographic, it's called [SciQ: A New Approach to Ethical Research in the North](#), which was amazing. I read it and I knew that I wanted to have you on the podcast as we were already in discussion about production and everything like that. But the thing that stood out to me was when you wrote about wanting to implement these concepts of SciQ into your work during the time where you were transitioning from a Masters to a PhD program. And I could only imagine that this would be a very intimidating subject to approach your supervisor and your committee, and even your department with.

DN: Yea. So, I guess a bit of background on, like, why I transitioned from Masters to PhD might help add some contextual information. When I started my PhD, everything was great and like normal, and I went to Cambridge Bay and I was there for 16 weeks working as a research assistant for Polar Knowledge Canada at the Canadian High Arctic Research Station. And that was before I started my program. So, I was able to go to Cambridge Bay before I was starting my work, do a little pilot, live in the community. Of course, I didn't actually participate that much in community because I was doing fieldwork, like, all day, every day, way out on the land, with maybe one other person, but it was an incredible experience. Like, I had a great time and then I started my Masters, and it was intimidating and difficult. You know, it was fine. And then the pandemic hit and I had a number of brain injuries as well. So, I had all these... I don't know. I want to say hiccups, but that does not describe how difficult that time was for everybody. And I really was starting to realize that if I just finished at the Masters level, I wouldn't be able to do the things that I had wanted to do as a grad student, and that included, at the time, developing skills in the field and in the lab, and so that was my primary concern. And then [SciQ came out - the paper from](#)

[Ikaarvik](#). And I was reading it and I was like, OK, this is why I've been feeling so weird about the work that I'm doing. Like, I'm excited about the project, I love going up North. But it just felt like something was missing because I had that experience in Churchill, where it was so involved with non-academics, and I was really missing that component when I was working in Cambridge Bay. So yeah, when I was approached by my advisor, my partner and I were packing up our apartment in Guelph and my advisor was like, "hey, you could do a PhD if you wanted." And I was like, huh, OK, that sounds pretty cool. But also, we're, like, leaving Ontario in 10 days. Like that is non-negotiable. She agreed to accommodate me. I live in Winnipeg now and I'm finishing... like, since I started the PhD, I've lived in Manitoba and I will finish it remotely. I was told as I was bumping up to PhD, I had to make a proposal, of course, to expand the project. And I was told by my committee... they're like, OK, it has to be something that's internationally renowned, and I'm like, this is so much pressure. So, it took me a really long time to write that proposal because the expectations were so high, which is great. Like, I love that my advisors have high expectations because I'm going to perform more. But at the time, it was a lot of pressure and I was really struggling. And then the opportunity to go back to Cambridge Bay with the Arctic Bioscan project, which is led by the Centre for Biodiversity Genomics, my data was contributing to their work and they've contributed funds to mine... like, it's a great partnership. And I heard that they were going to Cambridge Bay to talk to Hunter Trapper Organizations and stuff like that. And I just kind of sent off an e-mail to the lead of the project saying like, hey, can I come?... fully expecting him to say no. And he's like, yeah! I went up just to simply ask, like, what should I do? What could I do that would support HTO goals? And then that's sort of where the topic for my PhD came around and that felt really good. I had been losing motivation a little bit throughout my Masters because as exciting as the work was, it didn't feel like I was serving anything except for filling a gap in scientific knowledge. And that's super important, but that's not enough to motivate me to finish a huge project over two years. So now I feel so much more charged up about the work I'm doing because it feels like I'm serving more than simply filling a gap in our knowledge in the scientific community.

DN: OK, hold on. I forgot one part of your question about the department. I don't quite know how to approach this with what's required from me from a university standpoint because from their standpoint I have to do a scientific project and it has to fulfill certain criteria. Like it has to be X amount of chapters, it has to be this many publications, but there's nothing that says I need to consult with community or there's nothing on the human side of science at all. So, when I wrote my proposal, it was purely academic and scientific. Like there's no part of that where it says I went to community, this is the discussions we had, because to me that's not really what they wanted to hear. Like, they just wanted to hear that I had a viable scientific project that I can earn a PhD with. So as time went on and I'm spending a lot of time creating and leading workshops for First Nation, Métis and Inuit youth, writing articles like the one that you just mentioned for Canadian Geographic, and I wrote that with Mia Beattie, who is part of Ikaarvik, so that was a huge honor to create something with someone who's part of Ikaarvik. I spent a lot of time doing, from the university's perspective, perhaps non-program related things, but from my perspective that's a huge part of my work. I don't want to be working in a way that is extractive and perpetuating colonialism, so I've stopped telling the department and the university how much I'm doing in community-based work because they have stated that I'm spending too much time doing that. So yeah, I just stopped talking about it so much. I still do it, I just don't talk about it as much.

JM: A lot of times, you know, your supervisor, they have this funding that they've applied for, whether it's NSERC, or whatever it is, for like a specific project. And I feel like in your case, if it's something that's

super, either ecology or biology based, to transform it into something more interdisciplinary, like, did you have to apply for more funding?

DN: I think this is a really important question because that's a huge problem for most people. I am and was in very unique circumstances where my Masters was funded by Polar Knowledge Canada. When restrictions allowed, I was going to Cambridge Bay for long periods of time and that's not something most academics can afford, but because I was funded by the federal government, I could. That and working with Arctic Bioscan, and part of their work is, like, hiring local youth, communicating with HTOs, thinks like that. So, I had the youth that were hired and paid by Arctic Bioscan and the University of Guelph, would assist me, a government employee, in the field. And then my Polar Knowledge Canada funding came to an end last year. So, they funded me for like 3 years and that was amazing. Now, I have NSERC. As long as I have scientific output, that's kind of what they're concerned about. My advisor also has the NSERC Northern Supplement, and she hasn't been able to go... so she was leading a field course in Churchill, and she hadn't used any of it yet, so I'm able to tap into that funding. So yeah, it's a struggle and I've been pretty lucky, and I'm still, like sort of, trying to grasp that money to get back, to make relationships, maintain old ones, things like that. Yeah, it's hard.

JM: Well, it sounds, like, at least, you know, you're saying that you got lucky. But it ultimately sounds like it was the right decision to be funding these things. And just to quickly jump back to what you mentioned earlier, for the listeners who might be wondering, Dani mentioned a paper about SciQ and this was published in Arctic Science. It's called [SciQ: An Invitation and Recommendations to Combine Science and IQ for Meaningful Engagement of Inuit Communities in Research](#) and this was put out by Ikaarvik and it's a great, great paper. It very, very clearly outlines, in point form, recommendations for incorporating IQ before, during and after your research. I'm assuming you use this as a guide and did you use any other resources to kind of help you figure out the best ways to make your project how you were envisioning it?

DN: Yeah, so this paper certainly was the North Star for me when I was trying to figure out what's the most respectful and ethical way for me to work in in the North because I don't have...I'm not from there. I don't have any ancestry from the North, and every time I go up North, I'm a guest on Inuit lands and I started realizing that the way I was working was not being a good guest at all. So SciQ was really important, in my case, because it's so explicit in... it lays out very achievable things and that's what was missing because we're told you need to go work ethically and respectfully and honor locals in the North. And the other source I had were people that I had met that were also working in Cambridge Bay. And I really respected and admired the way that they were working there. So one of them - I'm gonna give a shout out to Les Harris. He is a fish biologist at the Department of Fisheries and Oceans. He's been going to Cambridge Bay... I want to say 14 years now. I was on a flight with him and, like, the second that guy touches down in Cambridge Bay, people are, like, yelling his name across the airport. He's spent the time to make really strong positive relationships with a huge number of people in Cambridge Bay, and he takes people out with him every single day that he does fieldwork and pays them really, really well. So yeah, I really respected the way that he was doing things. And he also told me that he would write reports for the community in plain language to let them know what they're up to, what the goals are, the results of their research, things like that. That kind of inspired me - OK, maybe I should be writing community reports. Like, if I want to be ethical and respectful of the people whose lands I'm a guest on, shouldn't I be, like, telling them what I'm up to and what's resulting from the work I'm doing on their

homelands? And he's definitely been one of the biggest supporters for me too, and inspirations. When I'm there and I don't know who to talk to, I just text Les, like he's such a great supporter.

JM: Yeah, well, it must be nice to have somebody on your side and supporting you through that. And we talked a little bit about, like, humanity in science earlier. And yeah, I agree it must be like rewarding to be working directly with communities. And what I really like about SciQ is that the IQ part represents more than knowledge, but again, people and their values. And I think I've always felt that researchers become researchers because we are passionate and curious, and we want to learn. And you know, especially like in the environmental sciences, most of the people I've encountered just love the environment, whether it's oceans or forests or whatever it is, and who have gone into this field wanting to protect the environment. But traditional Western science is like so deeply rooted in objectivity, which I think can make it really difficult for passion to shine through. Meanwhile, SciQ is, in part, exactly about those relationships and attitudes and behaviors. So I've always, personally, just found it really difficult expressing that it should make sense to blend the two together. But you're doing it and I'm just wondering, like, does having that kind of human aspect in your work feel intuitive?

DN: Yes. I have never been able to understand how people think science is objective. Every single person will understand the same thing differently, even if it's slightly differently, and if that is true, then how can anybody say that science is objective? It just... It really boggles my mind that people think that they can eliminate the fact that there's a human aspect of science. Because every human is doing it, it is inherently not objective. Anyway, so that's kind of part of the reason why I didn't like science when I first started my university programs, because it felt very impersonal and cold. I can't work like that. Like, I make things personal. I love meeting people and finding out what's important to them and figuring out how I can support them. And I also realized, as time went on, that one of my biggest passions is knowledge mobilization. I've gone out of my way to learn non-academic ways, I guess, to mobilize knowledge and that's things like speaking to seniors groups in my community or making connections with the Manitoba Métis Federation and running freshwater biodiversity workshops for First Nation and Métis Youth in Manitoba as part of, like, a canoe program. There are so many different ways that you can mobilize knowledge. It has to be different for different people. So, I'm trying to incorporate storytelling in the way that I mobilize the knowledge that I have either generated or learned or whatever. And also, a lot of students that I run into just don't realize that you can do the work another way because that's not the way that they were trained to.

JM: Especially because, like, academia, like, that whole environment is intimidating to start with. I do feel like the more people that I talk to through just the people I've met at ArcticNet - It's very refreshing.

DN: There are some scientists, mostly associated with ArcticNet, of course, they all kind of came together. So, you do see examples of how it can be done well and, like, the people who come to mind are, like, Max Liboiron does excellent work, Susan Kutz - excellent work. Susan's at U of Calgary, Max is at Memorial. So, you see examples of how it can be done well - it's possible, but it's hard.

JM: Definitely, definitely. I feel, like, super, super, super lucky to be working for ArcticNet. I never thought, like, as a graduate student that... yeah, it's just such a refreshing place to work after grad school. And yeah, it just has to do with, like Christine and Phil and Jackie, like their attitudes about science and the way they look at it, and the way that they're willing to learn and it's just - It's great. It's so, so refreshing. So, knowledge mobilization. I feel like that's a super big buzzword right now and I kind of associate it a lot with science communication. And again, back to that kind of topic about humanity,

social media has really helped in, kind of, breaking through people's ideas of what scientists do. I had been following you, you know, on Twitter for a long time before we met. And I love SciComm, of course. And I know that you like, besides just the writing pieces that you've done, I see your photography, and your beadwork, and I don't think people realize that these are all forms of science communication. Like, any time, you're taking something and teaching others about it, it's SciComm. So, have you always done photography and, like, what kind of got you into doing that?

DN: I started photography when I was 14 or 15 and I just, I don't know. It's fun. It was, you know, a great way to exercise creativity. And then I started working in the North and I was like, oh man, there's so much cool stuff up here, but the gear that I have right now doesn't capture it the way that I want it to be captured. And I was like, you know what? I'm going to buy myself a super ginormous telephoto lens. And I started practicing on birds in my parent's backyard, and it was awesome. And I was like, this is so fun. And I became obsessed with birds. And then I became really excited about going back up North and checking out the birds up there. And that's kind of, you know, led me to where I am now. I love taking photos of all different kinds of animals and sharing them online. And I also more recently started uploading to iNaturalist because for the most part those images were just for me, like it was a hobby. I mean, my photos have been used for things like journal covers for Canadian Science Publishing, whatever, like, unpaid stuff. I've sold some stuff, I've done paid gigs - but it was mostly for me, because I loved it. And then I realized, oh man, I have this 10s of thousands of images stockpiled. How can I serve the community with them? And then I realize, oh God, it's so easy, why didn't I think of this before? Started uploading to iNat and that I was getting, you know, all these images of birds, potentially vulnerable or endangered birds on the tundra and stuff. So, now I feel like I'm contributing a little bit more.

JM: I love that I am also a very, very amateur photographer myself, but it's been far, far too long since I've even tried to take pictures.

DN: Telling a story is not as embraced as it could be when we're talking about research, and I think a really simple way to look at it is people love looking at pictures. So, if people could just cut down on the text and just pull up, like, infographics or photos from the field, like, that is so much more interesting. And then I can focus a lot more on what you're trying to tell me about this work. I mean, when I go up North, I have a few different cameras that I bring with me and I take photos, like, underwater of different nets collecting different organisms. And yeah, so I'm able to share a lot of like, really cool images of the work that I'm doing and that contextualizes it, and it also helps tell the story of what I'm doing and why I'm doing it. I also wanted to mention too, like we're talking about knowledge mobilization and I guess to me it's kind of it's a part of SciComm, but it's also standalone. Because when I think about knowledge mobilization like in the scientific community, a lot of people immediately jump to, like mobilizing the research that I'm doing. But for me, I think about things like how my grandma taught me how to crochet. Like she mobilized that knowledge to me. Like, that's all knowledge mobilization and there's really better ways to do it. Like this podcast is a really good example. Like, this is more interesting than reading a paper, I think. I also have ADHD and, like, my brain is all over the place, so for me it's a lot easier to listen. But yeah, I don't know. There's a lot we could be doing better.

JM: Yeah, for sure. I think the way I've always looked at it is like SciComm is just kind of one way to mobilize knowledge, and like, which is why I work super closely with our Training and Knowledge Mobilization Coordinator Martine, who is also the regular host of Arctic Minded. So, shoutout to

Martine. But yeah, I think it's just really, really cool when you can find ways to be creative and touch into that, like creative side of your passion and then tie it back to something like science that you don't normally associate it with. I'm glad that, in my personal life anyways, I see so much of that now just being in this community and being involved on like science Twitter and things like that.

DN: Yeah. And I also more recently started using beadwork as a way to do scientific communication and and mobilize knowledge that way. My first project was to create a piece for the science and art portion of the MEOPAR (Marine Environmental Observation Prediction and Response) annual meeting last year. And yeah, I just beaded a mysis relicta, which is a type of freshwater shrimp that I had collected from a lake near Cambridge Bay. And then I also did a border around the shrimp of its actual DNA sequence, so color-coded to a bar code. So, I was really proud of that piece, and then I had Dr. Milla Rautio, who's also part of ArcticNet, reach out to me. And she works on copepods in this same lake that I had collected this shrimp, and she asked if I could make her a piece of beadwork that was copepods in their winter conditions. So they have these bright orange blobs in them that are lipids in the winter time, and she sent me a reference photo and I created this piece for her with like, the bright orange lipids with again, a real DNA sequence of a calanoid copepod that I had collected in sequence in that same lake. And she wears it to conferences, she wears it to consultations, and when people ask her about it, that's, like, a perfect segue into what her research interests are. So yeah, I think there's really cool ways that we can incorporate science and use it... use art pieces as a way to facilitate talking about science.

JM: Yeah, definitely. And I love that you've been given the opportunity to do that with researchers that you know and in the area that you work with. I think that's really, really cool. And yeah, it's beautiful when you can find ways to express yourself creatively and tie it back to something that you don't normally, or you wouldn't normally associate with one another, like science and art. I suppose that this idea of putting two things together that have traditionally been regarded as two separate concepts has been the overarching theme of this conversation. Well, Dani, thank you so much for joining me on Arctic Minded. It was a pleasure hearing your story and I hope that there are other students out there who can maybe find some guidance from your words or who are listening and find inspiration just to reflect even on their own journeys and where they are in their graduate research into the field of Arctic science.

DN: Thanks so much for having me. It was a pleasure. And yeah, for anybody listening who's either interested in hearing more or are unsure about different things, feel free to reach out to me. I have all the social medias and my e-mail address is open, so feel free to reach out.

JM: Dani posts a lot of cute pictures of her dog, so I would highly recommend following her, and also for some good bird and beading content, because who doesn't want to see that?

JM: Thank you for listening. If you liked this episode of Arctic Minded, please stay tuned for new episodes in this series available on Spotify and Apple Music and share your thoughts with us on Twitter, Instagram or Facebook. Take care everyone.