

to the initiatives of the European Union concerning an environmental data network, the Center of Earth Observation, and he was a member of the Advisory Board for the European Microwave Signature Laboratory at the European Joint Research Centre.

In 1982, Preben Gudmandsen founded the Danish Remote Sensing Society and until 1994 he was vice-chairman of the Danish Space Research Board. After his retirement in 1994, he continued working at the Technical University of Denmark at the DTU-Space.

Preben Gudmandsen was a unique initiator and inspirator, and under his leadership and thanks to his efforts, a great number of young scientists have produced doctoral theses. At a high international level, he has contributed to advances in primary geophysical sciences by creating new sensor equipment as well as new methods for analysis and data interpretation. His enthusiasm and

broad technical and physical knowledge, together with his engagement in different scientific disciplines, have been of decisive importance for the use of remote sensing in science, as well as in public operational daily services in Greenland.

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InfoNorth

Canadian High Arctic Research Station and Cambridge Bay: An Interview with Marla Limousin

by Danita Catherine Burke

CAMBRIDGE BAY, a town in the Kitikmeot region of Nunavut, is the host of Polar Knowledge Canada's (POLAR) new research station: the Canadian High Arctic Research Station (CHARS). On 8 November 2018, I had the opportunity to talk with Marla Limousin, Senior Administrative Officer for the Municipality of Cambridge Bay; to get her reflections on CHARS and what it means for the local community (Fig. 1).

Q: To what extent was the municipality involved in the setting up of the research station?

A: Extensively. First there was the lobby to get the station in Cambridge Bay, which was quite an extensive period of time and a strong lobby effort to have it located here. There were other communities in the North that felt it would be good there. Of course, Iqaluit is the capital. I think Baker Lake was another one and maybe Rankin Inlet. In the end, they chose Cambridge Bay—about 9 or 10 years ago now. There was a socio-economic impact assessment, or a readiness assessment, on the project—how it would affect the community over time. We were invited to participate that way in the socio-economic study. I think funding was provided to the municipality to produce that document and then they had a CHARS steering committee, and they met, I think, monthly. They would talk about the issues, what's going on, what's going to happen, so they were kept very much up to date on what's going on.

Q: Why was the site on the edge of town selected for CHARS?

A: There were some criteria established for CHARS, but basically they wanted to be incorporated within the community; there was a decision about whether it would be small labs throughout or whether it would be one building. Then they worked through that and what that would look like. In the end, the decision was to have this one complex and some of the items that were in it [the proposal] taken out—such as green housing (Fig. 2). They did a small bit of it, but not much. I was involved in the siting of it and the areas that we presented meant they could keep it as one compound. It was our largest piece of land that could



FIG. 1. Marla Limousin.

hold a compound plus some residential units and allow for expansion like they are doing now. It gave them a position within the community, though separated by a natural drainage ditch. Though they are set apart physically by the ditch, it is still in this beautiful building that the community can see. CHARS hasn't even been officially open yet and we keep thinking: "When is that going to happen?" Last year, we had done stuff thinking it would open on Canada's 150th [anniversary], but it never did.



FIG. 2. Canadian High Arctic Research Station.

Q: How interested do you think people are in coming to Cambridge Bay and to CHARS for research?

A: The level of interest internationally is increasing. We get thank you gifts from visiting scientists. There's this one that is illustrative of people's desire to be part of the Arctic; not sovereignty, but certainly exploration. One was a map of Japan from Japanese scientists and I find it really interesting because if you look at the perspective of their map and where Japan is, Japan is shown as being part of the Arctic world.

Q: What steps have been taken to keep the locals informed about who is coming to their community?

A: We have asked POLAR to send us a list of the visiting scientists every month, so we can say, "Wow, there's a botanist coming in!" Or, "The Vancouver Aquarium is coming in." Or, "There's scuba diving." Whatever is going to go on, we can tap in a way that provides an educational component and what we are trying to do is that when those scientists come, they give back to the community, but we are not actually seeing a lot of that yet. What we've asked for is that we will set up, for example every Saturday night, something like an Arm Chair Traveler Series. Scientists who are in town can come and they can talk about their project and what their research is about. We have talked about it, but we haven't formally set it up yet.

Q: How has the experience of increased visitation been for the people of Cambridge Bay?

A: Summer [2018] was crazy here. There were so many people. And all of them want a way into the community: through the Elders or through the youth. Some have been great and some are not great.

Q: What makes one great versus not great, in terms of a visiting researcher?

A: The not great ones to me are these scientists who want to talk to youth, so they walk around with a backpack full of candy and they solicit kids on the street to come

to a meeting with candy or a promise of something. They are issued a research grant and then they are soliciting kids through this way. We have made it really clear that this is unacceptable. We actually stopped that researcher.

Q: What changes has the community made to handle this influx of researchers?

A: We have started to formalize the access to our youth and access to the Elders. The Elders, these are wise people and the whole thing about northern Elders has been that they should be paid an honorarium. They are equivalent to university educated people in their own language and home and should be paid accordingly. We've formalized a group called the Mayor's Elders Advisory Council and the youth have been formalized into a Mayor's Youth Advisory Council. We've made it very clear to POLAR that anyone coming in and wanting access to the kids or the Elders will be coming through these forums and those groups will find the children [or Elders] for them to participate. That way, we have a central bank of knowledge. The way it has been happening, it's been like they meet someone on the street and ask, "Do you know any kids I can talk to?" And locals will go, "Yeah, I've got my little cousin and my nephew," and then they have this meeting and then all that data goes away. The formalization of committees will make it a more ethical process and facilitate knowledge retention.

We can also start with the kids building on their knowledge and their interest. We've had, for example, the iceberg program. It's a beautiful program; it's researchers who set up a program in New Zealand with the Māori—it's a Māori culture-based computer program that as the kids play they learn about anger management, self-worth, and all that; but it was geared toward the Māori. They have come to the North and said, "Hey, Inuit kids, we want to make this appropriate to you. Review, play the program, we're coming back and we're going to ask you how to make it better." Then they can actually teach them coding, a valuable skill. Those are the kinds of scientists we want to engage with.

The processes are things we are trying to get in order. We now have the Arm Chair Traveler Series potential for adults in the community. We've got the kids with connections into the committees with their knowledge. We've got the knowledge of who is in our community. Now what we are doing with that knowledge of who is in our community, we are just looking at it right now and we have started to connect the dots, but what we want to do is put it up on a Facebook feed or website feed and then really work with those people to do something more. To continue to get more than them just studying us and using it for their own advancement; you have to leave something behind, something that we want left behind.

Q: Why do you think Cambridge Bay was selected to host CHARS?

A: I don't know exactly, but here you can get up from Edmonton in a day and I think air travel had something to do with it. I think just being on an island and being quite North. Here you got the potential for sea access right there; we've got the Northwest Passage, which is a massive issue.

Q: How is the Northwest Passage a massive issue for Cambridge Bay?

A: Some of the Elders have talked about seeing submarines and periscopes as they travel. You hear this kind of stuff also in Hudson Bay. I did a lot of work in Hudson Bay and there are sightings of things, and submarines, and stuff there like high frequency sounds in the ocean that they feel are disturbing wildlife. There was the Arctic Sovereignty Committee that came through, maybe two months ago [September 2018]; it was made up of MPs from across Canada and they were doing a security assessment across the North. We let them know about the sightings and they were kind of freaked out.

Q: What kinds of security challenges are there in Cambridge Bay, in particular?

A: I don't think there is any real security in the North right now. Here this past year [2017], we had five cruise ships and about 14 private vessels landing here from all over. We have vessels from Germany, Cayman Islands, Denmark. These are 28–40 foot sailboats. These guys are crazy to come through and some of them were in sandals and I thought, "Do you actually know you're in the Northwest Passage?" This year is a whole different game because the ice was so thick nobody could move in or out.

These people who come in on ships and there has to be a place set up for their passports to get shown, but what if they don't? We have an RCMP station of like six [officers] and usually there is only five at a time because one is rotating through holiday. A cruise ship lands, we greet them—"Hi, welcome"—and then what happens? I don't know. There are these systems, but if you are looking at security of access through the passage—private vessel versus commercial vessels—what are they bringing in? What stuff is in their bilge? Just look at the Great Lakes with the lamprey [a parasitic fish]. What's going on? There is not even enough data.

I show people this when we talk about northern data (Fig. 3). This was found in a local crab trap. What we saw this past year was a bunch of divers go down in the ocean and people here have never seen inside this ocean. There are live corals, and the Vancouver Aquarium went down and they brought stuff up for the kids to look at—a bunch of starfish, urchins—and they put them in a tank so you could see what's going on. I think of all that's under there and it's not been

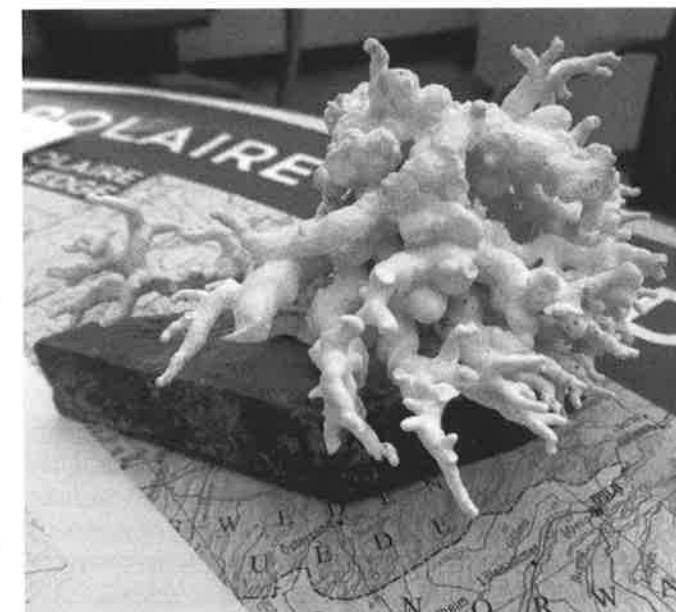


FIG. 3. Coral found in local crab trap, now in Marla Limousin's office.

mapped, then if a cruise ship is coming and docking or anchoring and their big anchor drops on a massive field of coral that is food for local species, and we don't know the biodiversity ... so before we start letting in all these cruise ships you think there would have been an assessment first; then we could say, "Yes. You can anchor here, but not there." That's the type of data we're hoping to get soon and they've a bathymeter but we haven't seen the results yet.

Q: Is CHARS helping to assess the local biodiversity?

A: Yes, they are. They've got relationships. I don't know what they are called now, but it was the Vancouver Aquarium, and they sent the divers up and they're the ones who actually went into the water with a camera and started to show what was done there and it was amazing. So yes, they [CHARS] are there. Other parts of that are we also meet with them [CHARS], but it's just starting. But, when I get a piece like this [of coral] and pictures from under the ocean, and I see cruise ships coming ... We don't have any "you must land here, and not here"—then I think that there is a need to bring all those pieces of information together, which hasn't happened yet. Hopefully, that bathymetric information, or diving information, will give recommendations on cruise ship protocol and private vessel protocol. The private vessels usually come into the dock there and they anchor around there.

Q: Did any vessels get in this year?

A: No. For me, when I look at the bottom line of how much money a cruise ship drops in a community by published information in the North, I think it was like \$40 dollars. That's not even worth all that energy

and aggravation, so why would we even want a cruise ship? Why would we lobby for cruise ships? And I don't know if we can [opt out of cruise ships] and I'm trying to figure this out. Can a community say, "No. We don't want any cruise ships to stop here"? I'm also trying to figure out what the real economic impact is. I know what the social impact is, but I don't know the economic impact of a cruise ship.

Q: Can you elaborate on the social impact of cruise ships and tourism?

A: The social impact could be very positive and what we've done is create tours. We know that 75% of travelers to the North are business travelers, people like you. They are people like CHARS scientists. They are people coming from other communities to have meetings. That is 75%! If I could entice you to take a snowmobile trip because you're going to see muskox or see Mount Pelly where the dragon lore is, you'd probably bite at that, right? We have more of a potential market with the people who will be our consistent 75% visitation as opposed to a cruise ship that may, or may not, get in.

The Crystal Serenity cruises have said they won't be sending 1800-person ships anymore and are building two smaller ships, with a 100–150 capacity because they want more of the National Geographic, academic, kind of experience; having [community] people [on] those ships as cultural advisors. So, there is an economy for translators, interpreters, and storytellers to be on those ships and some of them do. There is a lady locally who does this trip and another lady and they think it's amazing, so there is an economy.

The other part of it is that people come here and it doesn't look pretty in the summer. The streets are dusty and it's not what people think [about the North]. So, what I'm doing, my council has said to me, "Marla, get this community looking good. We need a



FIG. 4. Local sculptures in front of the Cambridge Bay Municipality office.



FIG. 5. Old Hudson's Bay buildings in front of the Cambridge Bay Municipality office.

beautification strategy." We started a park, we started the welding project, which is aimed at at-risk youth, and what it did was start to give cultural elements to our community, like the muskox and wolves sculptures in the park (Fig. 4).

We also have all the old Hudson's Bay buildings that we saved from demolition (Fig. 5). Stage one, we moved them [the Hudson's Bay buildings] in place in the park area. Stage two, we're doing the [external] renos. Stage three, we'll reno inside. Stage four, we got an old, other building on the side of the park that will become a welding studio so the kids will have a place to work out of permanently, plus it will be an art studio with a little coffee shop, so you can attract tourists who can come and congregate in one area. You come here and contribute to our economy by purchasing tours, buying art, eating at our coffee shop, etc., and we give you a positive experience in exchange. We are trying to make a product for the business traveler.

Q: How are the youth being engaged through the local welding art project?

A: Local young men, there is no rite of passage anymore in Indigenous culture, and they are lost, absolutely. But this guy, Andrew, who brought me this [piece of art] we brought him into the project because we went to RCMP and social services saying we were looking for 10 kids who need to belong to something. It's a welding project, they are going to learn art. Andrew, when he finished the program, he comes in and gives me this artwork and says, "I made this for you" (Fig. 6). It's probably the best gift I've ever gotten. This kid is an artistic savant though he's never had any training, but I had to get him all these notebooks to write his ideas down because his mind is firing like crazy ... Now he's just on fire. If I do anything before I die or leave, it's getting this welding studio done.



FIG. 6. Andrew's artwork in Marla Limousin's office.

Q: Are you coordinating with CHARS to promote these tourism opportunities within the research station?

A: It is only in the past year that I have realized that the business traveler is really the key person and forget about cruise ships. We're creating a number of tours now: day trips and overnight trips. We're working with the whole hunter and outfitter community and trying to get this thing packaged up. One tour, for example, is to see the flowers and the tundra and looking at the medicinal plants and as we started preparing this tour, we started revising a cultural component that's been lost because we have forgotten what plants have medicinal properties, because the medicine women are gone.

Q: How has the staff at CHARS from Polar Knowledge been integrating into Cambridge Bay?

A: With Polar Knowledge, if we have an issue, we're talking to them. If they have an issue, they're talking to us. We also meet once a month and talk about what's going on. They want to be players; they want to be part of the community, and it's "How do we welcome them?" And, "How do they become part of the community?" There is the movement to try and find out who they are so we can help them move in. We have an integration

strategy ... I think we work well and we're all trying to figure it out. It's a new relationship. Cambridge Bay is a different kind of community ... We've gotten a bit cosmopolitan. Recently we had a shared multicultural dinner in the community and it was phenomenal. We shared who we are and our different ethnicities, not just Inuit culture.

Q: How is the relationship with CHARS evolving?

A: We're working on it. There's an understanding from day one that the municipality, its people, and CHARS have to work together and we have to take [advantage] of each other, in a good, positive way. We're happy because what CHARS has given us is that we call ourselves the community of INgenUITY (ingenuity). It's the word "Inuit" inside of it [ingenuity]. We get to market ourselves as an INgenUITY place and we get to refer to CHARS, we get [access] to the scientists and the innovation here [at CHARS]. For example, we are doing a tiny home subdivision, so we go to CHARS and say we want to do these tiny homes and we want to look at wind energy and solar and any kind of systems that will reduce our consumption of fuel.

Q: What is the motivation behind the tiny homes?

A: I do a lot of work with the youth in the community and the suicide rate is just too high. I have been in the North for 38 years. Us in the community, we are involved in the deaths and when you start knowing exactly what to do when someone dies, you jump into step one, two, three, four, five; it should never be like that. We should never know this process. So, at that point I decided to throw my effort into youth. Last year we created the year of youth. We formed the Mayor's Youth Advisory Council. We gave those kids a major say in what's going on and we started to discover a lot of the issues.

The issues are that they want to go to school, they want to go away if there is the right support in the south, but they also want to come back to their community. They don't want to live in an overcrowded house. They want to come back and they want to work here. There are lots of jobs for educated people and a big need, but we don't have any entry type homes. A three-bedroom house right now is \$450 000 dollars. Who can afford that?! What we've [the municipality] said is that if we can bring a home in for \$150 000–\$200 000, with a smaller footprint on the land, and we can help them with a down-payment assistance program from the housing corporation. The motivation is to give youth access to an entry home and as they have family, then they can upgrade.

Also, people like me and scientists who want to come and live up here for a couple of years; I'd buy my own tiny home and make an equity investment and sell it when I go. This way you start a more rational housing market. I can go and say to Martin [Raillard of CHARS] that if you get someone in [with knowledge

related to tiny homes or homebuilding] I get to talk to them. That way I get more knowledge, my staff gets more knowledge, and we become more innovative. That is a symbiotic relationship.

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