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Standing Committee on Science and Research

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• (1100)

[*English*]

The Vice-Chair (Mr. Corey Tochor (Saskatoon—University, CPC)): I call this meeting to order.

Welcome to meeting number 30 of the House of Commons Standing Committee on Science and Research. Today's meeting is taking place in a hybrid format, pursuant to the House order of June 23, 2022. Members are attending in person in the room and remotely using the Zoom application.

Pursuant to Standing Order 108(3)(i) and the motion adopted by the committee on Monday, September 26, 2022, we are continuing our study on citizen scientists. I'd like to make a few comments for the benefit of the witnesses and members.

Please wait until I recognize you by name before speaking. For those participating by video conference, click on the microphone icon to activate your mike and please mute yourself when you are not speaking. For interpretation for those on Zoom, you have the choice, at the bottom of your screen, of floor, English or French. For those in the room, you can use the earpiece and select the desired channel.

As a reminder, all comments should be addressed through the chair. For members in the room, if you wish to speak, please raise your hand. For members on Zoom, please use the "raise hand" function. The clerk and I will manage the speaking order as best we can, and we appreciate your patience and understanding in this regard.

In accordance with our routine motion, I am informing the committee that all witnesses have completed their required connection tests in advance of the meeting.

We have two groups presenting today. We have Environment and Climate Change Canada, and Parks Canada. Each group will have five minutes to address the committee.

Presenters, please watch for a signal from me once we get down to your final 30 seconds.

Opening up for today, we will have Environment and Climate Change Canada for five minutes.

Dr. Shawn Marshall (Departmental Science Adviser, Department of the Environment): Thank you.

Good morning, Mr. Chair and honourable members. On behalf of Environment and Climate Change Canada, thank you for the oppor-

tunity to speak here today. Thanks to the committee for bringing the important topic of citizen science to the table.

[*Translation*]

Canadians care deeply about the environment—whether it is in terms of the weather, climate, wildlife, air quality, pressure or the state of our rivers, lakes and oceans. This provides many reasons to engage with the public in the environmental sciences.

[*English*]

As I know you have discussed in earlier committee sessions, science programs that engage the public have many benefits. They increase scientific literacy, empower citizens, create awareness and instill a culture of environmental stewardship. They're also a tremendous vehicle for scientific outreach for sharing our science stories. When they are well designed—and, speaking as a scientist, I will say that this is the crux—citizen science programs and observations can inform scientific analyses, create new capacity and contribute to the body of evidence that the country needs in support of environmental management and protection.

We could spend a lot of time defining citizen science. That would probably not be the best use of our time here, but it's important to acknowledge that there are many different ways in which the public contributes to science activities. Successful citizen science programs include a very deliberate design with strict observational protocols and quality controls. There should be very clear pathways for observations to flow into scientific analyses in support of specific questions or knowledge needs. The results also need to flow back to the public, as people want to see the impact and value of their contributions.

The department, ECCC, has been involved in a variety of citizen science programs for decades now. Some of these programs are our own initiatives, but others are led externally. Through them our scientists engage and sometimes support the development of protocols, contribute to the data and take advantage of the data that's available.

One example is an extremely successful wildlife monitoring program called the North American breeding bird survey. This is long-term bird monitoring that ECCCC coleads with the U.S., which taps into the enthusiasm and skills of expert birders. These observations have been foundational to our understanding of bird population trends, ecosystem health and impacts of climate change.

Another example, which I think most of the members are familiar with, is the CABIN program, the Canadian aquatic biomonitoring network, which targets aquatic ecosystem health. We're very happy to speak more to these programs in the specific questions the committee may have.

The department also coordinates citizen observations in support of emergency response, through phone lines or online tools, where-by users can call in real-time information on, for instance, dead bird observations or oil spills.

There are many other examples of how ECCCC science programs engage in external initiatives, including eBird or iNaturalist, which are some great online platforms that the committee has already heard a little bit about. Our scientists very much tap into these. For example, eBird data mining has been used to assess dead bird observations for early warnings of bird zoonosis.

There are other examples such as SmartICE within our weather observations. The meteorological service of Canada, MSC, integrates precipitation measurements from grassroots volunteer networks, for example, sometimes using instruments and protocols that are provided by the department.

This committee may also wish to consider community-based monitoring and indigenous partnership programs in which communities are active research partners in environmental monitoring. These are being increasingly led by indigenous governments and organizations. These need to be codeveloped to address areas of shared concerns such as water quality, wildlife health or contaminants.

Observations that are gathered through citizen science programs or social media can feed scientific analyses, but we really want to be clear that these represent data points and not the science itself. There's a lot that citizens can contribute to that scientific practice, but putting it to use requires trained scientists to support data curation, protocols, quality checks, processing, modelling, statistical analyses and the background context and existing state of understanding of other sources of data that almost always need to be brought into the interpretation.

There are many different outputs for this kind of work, including scientific papers, but these studies also directly inform policy and legislation. Again, we would be very pleased to expand on this if it would be of interest to the committee.

At ECCCC, we see great growing potential within citizen science partnerships. We recognize the value of departmental involvement in these programs and the way they naturally expand the reach, impact and understanding of our science and help build public investment in it.

Thank you very much.

• (1105)

The Vice-Chair (Mr. Corey Tochor): Thank you so much for that testimony.

Now for an opening statement of five minutes, we have Parks Canada.

Ms. Christine Loth-Bown (Vice-President, External Relations and Visitor Experience, Parks Canada Agency): Thank you, Mr. Chair.

Good day. *Bonjour. Boozhoo.*

As the vice-president for external relations and visitor services at Parks Canada, I am pleased to be here to address the committee today on behalf of Parks Canada.

Let me begin by acknowledging that I am on the unceded traditional territory of the Algonquin Anishinabe people.

The Parks Canada mandate identified in the Parks Canada Agency Act centres on two fundamental principles: to protect and to present Canada's natural and cultural heritage. Today we will summarize how citizen science contributes to achieving this mandate.

[*Translation*]

Protecting cultural and natural heritage requires a clear understanding of the condition of Parks Canada-managed places and assets, the threats and stressors, and potential mitigation approaches to ensure their resilience, durability and persistence. To this end, we work with indigenous partners, whose knowledge is crucial to a holistic understanding of Canada's heritage.

We benefit from partnerships and collaborations with academic researchers, non-governmental organizations, other levels of government and international partners. At each site we manage, specialists conduct research and gather relevant information to inform management decisions and actions.

We are also well aware of the power of citizen science. Environment and Climate Change Canada's presentation has highlighted the value of citizen science and demonstrated how it can supplement formal research to inform government programs and decisions.

[*English*]

Parks Canada has made use of contributions from citizen science. While we have not yet incorporated citizen science data into our formal monitoring regime, which supports reporting to Parliament and Canadians on the ecological condition of protected areas under our stewardship, we value citizen science and have put in place a number of different national programs that we can speak about later today in the question period.

It's important for us in our national reporting that standards and protocols be applied in a highly consistent manner across Canada, including the most remote parts of the Arctic seldom visited by citizen scientists. Nevertheless, our scientists and monitoring specialists stay abreast of methodological and analytical developments that may allow us to incorporate citizen science data in our reporting regime to Parliament in the future.

In recent years we've seen an increased public interest in conservation and have heard growing concern from Canadians related to the pressing and topical conservation issues of our time, including climate change, biodiversity loss, species at risk and the benefits that healthy ecosystems provide to communities. Canadians express a keen desire to get involved and to help in some way more tangibly than simply becoming more aware. This is where citizen science efforts represent a significant opportunity to involve Canadians in conservation and increase understanding and support.

Our public engagement work through citizen science is in early stages with efforts focused on a selection of initiatives including "Team Up and Clean Up the Shore". Through this program, visitors and community members participate in Parks Canada-led shore cleanups across Canada. While picking up litter and plastic waste, visitors are also helping to collect data and contribute to marine research. This data will allow Parks Canada scientists to identify sources of marine litter and mitigate them.

"Take a coastie" is a shoreline-monitoring citizen science initiative led by the University of Windsor in partnership with Parks Canada. It's based on the existing CoastSnap program developed at the University of New South Wales in Australia. Capitalizing on the social media popularity of selfie photographs, this program encourages Canadians to take photographs of their coastlines at designated coastal monitoring spots in nine participating Parks Canada locations.

Finally, there is iNaturalist, an international biodiversity database of images and information on natural observations compiled by amateurs, citizen scientists, scientists and naturalists. iNaturalist Canada is led by the Canadian Wildlife Federation along with Parks Canada, NatureServe Canada and the Royal Ontario Museum.

Moving forward, Parks Canada plans to continue expanding this preliminary work and explore ways to foster more collaborations and increase the engagement of Canadians in citizen science initiatives in more Parks Canada places across the country.

● (1110)

Thank you. *Meegweteh*.

The Vice-Chair (Mr. Corey Tochor): Thank you to both of our witnesses today.

We are going to start the six-minute rounds with Mr. Lobb.

Mr. Ben Lobb (Huron—Bruce, CPC): Thanks very much.

This question is for the Environment Canada people who are on Zoom today. I'm just wondering what role they feel farmers play in citizen science?

What are your comments on that?

Dr. Shawn Marshall: A lot of this will be deferred to our colleagues at Agriculture and Agri-Food Canada, but I would also submit that Aura Pantieras and the Canadian Wildlife Service have some comments to support this.

Ms. Aura Pantieras (Director General, Wildlife Assessment and Information, Department of the Environment): I think what is probably important to note is that we have about 100,000 Canadians who have contributed data to many of the citizen science surveys, and this could include many of the farmers in the context of monitoring birds. We use bird surveys because they're effective indicators of environmental health. Birds occupy every habitat, and they are relatively easy to survey.

We can expand on some of these findings, which many Canadians over 50 years have contributed to, by tracking and monitoring populations of migratory birds with importance across Canada.

Mr. Ben Lobb: I do have a couple more ag-related questions, but while we're on this topic....

At our last meeting, I brought up a question to the bird folks. I asked them a question with regard to their report from 2019, and you don't have to be familiar with it. You brought up the migratory birds. Many of the rural members of Parliament here in the House of Commons would have wind turbines in their ridings. I do. I have probably close to 400 in my riding due to the fact that it's close to Lake Huron and the strong winds that come off the shoreline.

Does anybody at Environment Canada track how many birds are killed every year because of wind turbines? Does anybody track that? I know they track cats. Somebody was telling me they track cats, how many birds cats kill every year. I know that's a big number, but I'm just wondering, with regard to wind turbines, if anybody tracks that number.

● (1115)

Dr. Shawn Marshall: Please go ahead, Aura.

I would also suggest that Jennifer Provencher can probably provide some input on this.

Thank you.

Ms. Aura Pantieras: I'll note that ECCC is very familiar with this paper. In fact, it was the Canadian Wildlife Service analysis of data obtained from citizen science over the past half-century that was used in the paper published in 2019 in the highly respected international journal *Science*, which estimated the loss of about 30% of the total bird population in North America.

That means that there are about three billion fewer individual birds in North America than there were in 1970, which is a stark statistic. This information was important in terms of targeting needed urgent conservation attention in Canada, the U.S. and Mexico, including targeting the declines of shorebirds, grassland birds and aerial insectivores. I would probably add that it is through the efforts of the North American breeding bird survey's many citizen scientists that we are able to monitor and assess the decline of bird populations across North America.

Over to you, Jennifer.

Dr. Jennifer Provencher (Research Scientist, Ecosystem Health Research, Ecotoxicology and Wildlife Health Division, Department of the Environment): Thank you.

I just want to add that, indeed, we do have several programs that work with farmers directly on their lands to support both bird and bat conservation, and this is particularly true in the Prairies where some of the grassland bird species are more in decline.

There are several programs led by the Canadian Wildlife Service, as well as by our science and technology branch researchers, who are working on these species that, in particular, use grasslands and agricultural lands in very specific ways.

I don't have the numbers in front of me, but we certainly have several partnerships where we work with the land holders, the farmers, on their lands to track different populations of birds and study in particular how the different types of management of agricultural lands can support biodiversity.

Mr. Ben Lobb: I think I have time for a couple of quick questions here for Shawn.

Shawn, I just wonder... When we're making policy—when I say “we”, I mean the government and the civil servants—say, for example, the 30% reduction in fertilizer emissions, do we consult with the citizen scientist who would be the farmer? Do we consult with that individual and say, “Hey, Jim, do you think you could reasonably reduce your fertilizer use by 30% by such and such a date?” or do we make these targets and then say, “Hey, Jim, here's what you have to do, pal”?

Which one is it? Do we respect the citizen farmer scientist when we are making these targets?

Dr. Shawn Marshall: Thank you for this question. It is a good one, of course.

This really gets into the policy realm, which is beyond the purview of the science, the scientists, the science managers and the science advisers here.

We are certainly very interested and active in trying to understand the fertilizer usage in partnership with AAFC colleagues and understanding the impacts on the environment. However, the actual policies of the 30% levels or how this communication works with our partners within the farming community are more at the policy level and not something that we can speak to here.

The Vice-Chair (Mr. Corey Tochor): Thank you so much.

Moving on to the member of Parliament for the Liberals, we have MP Lauzon.

[*Translation*]

Mr. Stéphane Lauzon (Argenteuil—La Petite-Nation, Lib.): Thank you, Mr. Chair.

I would like to begin by thanking the witnesses, as well as those who are answering our questions.

The citizen science portal identifies science projects. You mentioned to the committee a number of examples, but on the site, the portal, we see only 55. For example, Abeilles citoyennes and Frog-Watch. The site also talks about ice and a number of specimens.

Is the portal a partnership between the departments of industry and the environment? If so, how was it established?

Let's start with the Department of the Environment.

• (1120)

[*English*]

Dr. Shawn Marshall: Thank you for this question.

I've perused this portal and find it very useful. I know of many citizen science projects in the country that aren't on the portal, but it captures a number that I was unaware of. It's a valuable portal.

My understanding is that it comes from ISED and that there are some programs in various other departments that are also represented on the portal.

I think I might have to clarify the role that ECCC may have played, or not, in the set-up of this. We can find the response to this and get back to the committee in writing on that specific question of whether this was codeveloped with multiple departments or if it's ISED-led.

The portal includes a couple of projects that we mentioned and several others that the department is involved in, like SmartICE, which we didn't talk about too much. There are many others, some of which are stand-alone NGOs that don't involve federal government partnerships.

[*Translation*]

Mr. Stéphane Lauzon: Could you send that information to the committee, so we can include it in our report?

In a rural riding like mine, there is no partnership with a college or a university, for instance. Citizens who want to get involved in science or do research are often volunteers, bird or wildlife groups.

What would be the best way to provide citizens with information to turn them into volunteer scientists? Is it also possible to work by sector and reach out to those who would like to do some experimenting in the forest?

[*English*]

Dr. Shawn Marshall: Thank you for this question.

I'll add a bit and then I would suggest to the chair that Parks Canada may have a big role to play and may have some comments on this as well.

I think the portal is a good start to this, but a lot of the public might not be aware of it. As we grow citizen science projects, I think it would be very helpful to have communications and outreach strategies to work with schools and with communities to really expand on things. Right now, it's a bit of word of mouth by people that know eBird or iNaturalist and work with each other on this.

I will suggest that we hear a bit from Parks Canada here because it has a very valuable role in communicating and connecting science with the public.

[*Translation*]

Mr. Stéphane Lauzon: Can Parks Canada officials answer, as well?

Ms. Christine Loth-Bown: Of course.

Thank you for your question.

I will turn the floor over to my colleague, Manuela Charette, who will be able to talk about our programs.

Ms. Manuela Charette (Director, Brand Experience Branch, Parks Canada Agency): Thank you, Christine.

[*English*]

Thank you, Mr. Chair.

As mentioned in the opening statement, our three main national initiatives are based on volunteers. We're promoting these initiatives on our website. There is a very clear call to action to be a volunteer right on our main national website, our Parks Canada website.

We are encouraging people to participate in existing initiatives or specific local initiatives that are offered at different sites. One example I have is a very recent program that we initiated in 2022, as mentioned by Christine in our opening statement: the Team Up and Clean Up the Shore. It's a new initiative that was initiated because Canadians want to be involved and volunteer with Parks Canada. This pilot program is essentially engaging visitors and local communities to clean the shores of specific Parks Canada places. We are now giving shoreline cleanup kits at more than nine Parks Canada locations. We've seen participation by over 250 people, who have literally collected more than 1,800 kilograms of garbage off of the shorelines.

We are promoting these national programs and encouraging volunteering, and some of the local sites are encouraging visitors and communities to participate.

• (1125)

[*Translation*]

Mr. Stéphane Lauzon: Thank you very much.

[*English*]

The Vice-Chair (Mr. Corey Tochor): Thank you so much. You had four seconds extra there.

Moving on to the next round, we have MP Blanchette.

[*Translation*]

Mr. Maxime Blanchette-Joncas (Rimouski-Neigette—Témiscouata—Les Basques, BQ): Thank you, Mr. Chair.

I welcome the witnesses who are joining us.

I will ask my first questions right away. They are for Mr. Marshall.

Mr. Marshall, we have obviously heard from other witnesses during the course of the various studies the committee has done on citizen science. We had Quebec's chief scientist, Rémi Quirion, who came to talk to us about the importance of citizen science in increasing scientific literacy. Of course, we know that there must be engagement in this regard and that the federal government needs to play an important role.

I took a look online at the government's citizen science portal site. You know, the first thing you see, featured, is a very nice project called Notes from Nature - Digitizing Biological Collections in Canada. In brackets, it says it's "in English". It's in English only.

Mr. Marshall, as science advisor to the Department of the Environment, can you tell us how it is possible for the government of a country with two official languages to create citizen science initiatives in only one of the two official languages?

How is it possible to fully engage francophone communities when you do programs or initiatives that are only available in one of the two official languages?

[*English*]

Dr. Shawn Marshall: Thank you for this question.

I cannot speak to the program you mentioned, so I'm speculating here. My guess is that this is a program run by an NGO, which is probably in the English parts of Canada and does not have that federal bilingual mandate. Anything that flows or is run by Environment and Climate Change Canada—

[*Translation*]

Mr. Maxime Blanchette-Joncas: Mr. Marshall, I'll go back to you.

As a departmental science advisor, do you find it respectable that the federal government promotes English-only initiatives on its website?

[English]

Dr. Shawn Marshall: That's again a matter of opinion. That would be my personal opinion and not representative of the department.

[Translation]

Mr. Maxime Blanchette-Joncas: Mr. Marshall, let me repeat the question.

As a departmental science advisor, do you find this respectable? Do you think this is a good way to do things?

Would you advise the government to do this and publicize a citizen science initiative in only one of the two official languages?

[English]

Dr. Shawn Marshall: Again, as an adviser, I think it's clear that any of our own programs, anything run by a Government of Canada department, would be in both official languages. However, we don't have the purview or authority to advise external NGOs on their communications.

[Translation]

Mr. Maxime Blanchette-Joncas: As I understand it, Mr. Marshall, the federal government is not even complying with its own legislation, the Official Languages Act, which requires it to communicate in both official languages.

I hope you can pass on my message to the scientific community within the government itself. I hope you can influence public policy through your advice and enable communication in both official languages.

Quebec's chief science advisor, Rémi Quirion, came to talk to us about some of the programs like the engage program, from the Quebec government, which allows for the citizen science initiative. It is possible to get financial support and access to programs to support citizen science efforts.

Is there anything similar in your department?

[English]

Dr. Shawn Marshall: I may have to ask for a clarification on the question of public funding to support citizen science. We have funding that we direct towards citizen science programs sometimes as a grant contribution to an NGO, for instance. Sometimes it's a university partner, or sometimes it's our own program and we provide some funding to facilitate training or equipment in support of those programs.

Was that the question?

• (1130)

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you for your answer, Mr. Marshall.

I will just rephrase my question.

Is there any financial support for citizens to propose citizen research programs through your department?

[English]

Dr. Shawn Marshall: Thank you for that. This is a great question. To my knowledge, we don't have a formal call for citizen science proposals, but when people approach us or when we're working with our partners.... For instance, if a university research project or Birds Canada is proposing a citizen science component, we will definitely listen and—

[Translation]

Mr. Maxime Blanchette-Joncas: So your answer is no. From what I understand, there is no financial support.

As a departmental science advisor, would you advise the government to enable and develop programs with available and adequate financial support to ensure that a citizen science mobilization is created?

[English]

Dr. Shawn Marshall: There are vehicles for this, but I see that Aura Pantieras and the Canadian Wildlife Service has a contribution to support on this question.

[Translation]

Ms. Aura Pantieras: Thank you for your questions.

Collectively, over 100,000 Canadians contribute data to one or more citizen science surveys on birds.

This includes broad participation by French-speaking citizen scientists in numerous projects on eBird and in the Québec Breeding Bird Atlas.

Our department is working closely with partners to ensure that all these surveys have bilingual interfaces in Canada to support participation in both official languages.

Mr. Maxime Blanchette-Joncas: I'm sorry, but this is my time.

That is not what I was asking you.

I thank you for reading the line you just received in writing. I can clearly see that you are reading from a text that you just received regarding the initial questions I asked Mr. Marshall—

[English]

The Vice-Chair (Mr. Corey Tochor): I apologize, but we are over time right now.

Moving on to the next round, we have MP Cannings for six minutes.

Mr. Richard Cannings (South Okanagan—West Kootenay, NDP): Thank you.

Thank you to the witnesses here today. I'd like to start with Environment Canada, and perhaps Mr. Marshall or anyone else can chip in and talk.

Other members of the committee know I talk about birds a lot. The North American breeding bird survey was mentioned. This, I would say, of all the things we've heard about is probably one of the most important citizen science programs in the world, certainly in North America, because it creates very strong and usable data over decades so that we can follow the population trends of birds. In doing so, we can then make inferences about where the problems of our environment are happening. We've heard that we've lost three billion birds over the last 50 years or so. That data comes 99% from the breeding bird survey. This is a program that's administered in Canada by Environment Canada.

I'm just wondering if someone would like to expand on that—perhaps some of the history and where this is used. Again, I could probably expound on it, but I'll let you take the floor and talk about when we are declaring species as threatened or endangered or of special concern. For birds, that data comes largely from the breeding bird survey, and it is a bigger dataset, by far, than we have for any other animal, plant or wildlife species.

Mr. Marshall, I don't know if you want to take the floor on that, but I think the importance of this program is important to get on the record.

Dr. Shawn Marshall: Thank you for this question. Perhaps I could take a moment to thank you for your long-term work and investment in this. It's been valuable.

I believe this is a good question to turn to my colleague, Aura, to comment on.

Ms. Aura Pantieras: Thank you.

I echo your words, Shawn. I want to thank Mr. Cannings for his own long-term contribution to citizen science.

In general, the monitoring performed by citizen scientists—specifically, the breeding bird survey we coordinated with the U.S. and Mexican governments for several decades—helps, once it is validated and curated, and it contributes to decision-making for conservation. Some of those examples include evaluating conservation and management actions, and prioritizing the conservation activities we do. As we discussed, for example, it targets declines identified in aerial insectivore, grassland bird and shorebird migration. It helps with sustainable hunting. It also contributes to prioritizing conservation in land-use planning.

I think another key element worth noting is that it empowers Canadians to contribute to conservation actions, including, for example, turning that information into conservation activities to protect species at risk. As was noted, this information is used by the Committee on the Status of Endangered Wildlife in Canada, which provides advice to the environment minister on risks to wildlife species. It can even be used in the context of regulatory decisions by the department.

• (1135)

Mr. Richard Cannings: Thank you.

I'd like to return to a comment made earlier, I think, by Mr. Marshall—or perhaps somebody else—about remote and northern indigenous communities and how they can play a role.

We obviously have vast areas in our country where it's very difficult to get professionals out on the land, water or ice to collect this data. Community members have been doing more of that for the scientists of Canada. I would like to name three programs I've come across, and I'm wondering whether Environment Canada uses data from these—perhaps just comment in general.

One is the Nunavik sentinels project, promoted by Espace pour la vie in Montreal. It gets community members in Nunavik in northern Quebec, especially young people, out on the land to collect information on insects. The Arctic Eider Society in Sanikiluaq, by Hudson Bay, does similar things, and there's a new phone app called SIKU through the Indigenous Knowledge Social Network, which promotes the gathering of this sort of data.

Is Environment Canada using any of these programs in northern Canada?

Dr. Shawn Marshall: Thanks for the question.

You're absolutely right. Northern Canada is the place where we very much need indigenous guardians and citizen science to expand our observational capabilities.

I might turn to my colleague Jennifer Provencher, who can speak more specifically to those three programs.

Dr. Jennifer Provencher: Thank you. I can speak a bit more to those programs.

The sentinels program is an academic program that is certainly supported through several different academic networks. The idea is to go out on the land, make many different types of observations and bring them into a central place.

Environment and Climate Change Canada has been more involved with the Arctic Eider Society, as well as SIKU. The Arctic Eider Society is focused around southern Hudson Bay and was the parent of SIKU.

I can spend a little more time on SIKU. This is an indigenous and Inuit Facebook that is specifically codesigned with partners. Academia and Environment and Climate Change Canada have been involved, along with community members in Sanikiluaq and other areas. The idea was to design and put online an application, so Inuit can be out on the land and report their observations as they travel. We have partnered and developed functionality within the app so hunters can report dead or sick birds. There is work with our scientists working on polar bears and their health, and when hunters and harvesters are hunting or working with animals they've harvested, they can report any abnormalities in the physical condition of the animals. That information is owned and controlled by SIKU and the indigenous co-collaborators on—

The Vice-Chair (Mr. Corey Tochor): I'm sorry, but we are out of time for that round of questioning. Maybe in future questions you can expand further on that.

Moving on to the five minute round, we have MP Soroka.

• (1140)

Mr. Gerald Soroka (Yellowhead, CPC): Thank you, Mr. Chair.

Thank you to our witnesses for coming today.

Because we're doing so much on the bird study, I was curious about the controls we have in place for accurate information from citizen scientists when dealing with bird deaths, either from buildings, windows, stray cats or wind turbines.

How do we determine that they're reporting all of the deaths as opposed to maybe half of the deaths or something? What kind of information do we have with safeguarding that?

Dr. Shawn Marshall: I know we're working on analyses of bird mortality with colleagues in universities.

I might turn it back to you again, Jennifer, to fill in a little bit on some of those partnerships.

Dr. Jennifer Provencher: Sure.

One of the things that Environment and Climate Change Canada has supported is the Canadian Wildlife Health Cooperative. This is the network of vet colleges and veterinarian groups across Canada from coast to coast to coast in both of our official languages.

There is a hotline where the CWHC can receive calls. You may have seen this recently in relation to the bird flu, or avian influenza. What the CWHC does with the ECCC support is understand, using those types of reports both through digital [*Technical difficulty—Editor*].

Mr. Gerald Soroka: I have a point of order.

The Vice-Chair (Mr. Corey Tochor): I'm going to pause this for a second. We are having some audio problems.

Colleagues, I think it may have ceased. We're going to keep going and see how it turns out.

MP Soroka, I put 10 seconds back on the clock. You have three minutes and 40 seconds.

Mr. Gerald Soroka: If she can't finish answering that question, can it be in a written submission, please?

The Vice-Chair (Mr. Corey Tochor): Absolutely. The witness will provide a written submission to Mr. Soroka's question.

Carry on.

Mr. Gerald Soroka: Thank you.

My other question is a follow-up.

With the information on the bird deaths in Canada and the U.S.—a study's being done there—do we collaborate with any other countries or coordinate information to see if other countries with wind turbines also are experiencing the same mortality rate? Is that possible or not? That's from wind turbines.

Mr. Marshall...?

Dr. Shawn Marshall: Yes, I'm just trying behind the scenes to see whether Aura or Jennifer would be best positioned to address that.

All of our science is international. We're working with colleagues on issues like wind turbine mortality. As an international science community, I don't know if there are specific partnerships that either Jennifer or Aura can speak to, or if we will need to get back with a written response.

Jennifer has her hand up.

Dr. Jennifer Provencher: I can say that we work on bird mortality via turbines, fisheries bycatch or bird flu with multiple partners. One of those is the trilateral between Canada, U.S. and Mexico. There's a migratory bird table. Much of our work is also done at the Arctic Council level. You can imagine the eight Arctic states.

We share bird populations with the globe. We work with several different organizations to ensure that we are coordinated and creating comparable science and comparable citizen science initiatives across those bird landscapes in order to get the best estimate that we can.

Mr. Gerald Soroka: I have a follow-up question.

When it comes to bird mortality from buildings, windows and even stray cats, is that classified as a climate crisis area or a man-made structures area? How is that defined for bird mortality?

Dr. Shawn Marshall: Thank you. It's a good question.

It is separately categorized and there is work to break out wind turbine versus building versus cat versus maybe the more indirect effects of climate change and habitat change.

• (1145)

Mr. Gerald Soroka: Do we have that kind of information, like I said, from other countries in the world to see if we're on the same wave or same level of bird deaths, or is that not coordinated?

Dr. Shawn Marshall: There's certainly a lot of global literature on this and various assessments, including the biodiversity assessment reports. I don't know, in terms of mortality in Canada versus other countries if that's something that anyone—maybe Jennifer—can speak to, or if this is something we should return to you.

Aura, do you have some thoughts on this?

Ms. Aura Pantieras: Yes, I would emphasize that there is coordinated work within North America and South America, I would say, so throughout the Americas. There is research and evidence that highlights that the mortality of birds related to wind turbines is relatively small compared to windows, cats and other human anthropogenic activities.

Mr. Gerald Soroka: It's relatively small compared to the number of wind turbines that we have right now, but when we continue to increase the number of wind turbines it is a factor in the bird populations. That's something to consider.

I'll move on to Parks Canada with the iNaturalist app. I think that's quite interesting. It's the first time I've seen this app so I don't know much about it.

Does this app just picture relate it and then automatically document it, or do people have to put in information on what they think a species or a plant is in order to get it identified?

The Vice-Chair (Mr. Corey Tochor): Respond very quickly here.

Ms. Christine Loth-Bown: I will turn it to my colleague, Stephen, to speak more about the iNaturalist program.

Mr. Stephen McCanny (Manager, Ecosystem Science Laboratory, Parks Canada Agency): It's very simple. There's posting as in a normal social media application, but you do get to put in a candidate name for the species. That is checked by experts. We have both raw data and data that is verified.

The Vice-Chair (Mr. Corey Tochor): Thank you so much for that. We're out of time.

Now we move on to MP Bradford for five minutes.

Ms. Valerie Bradford (Kitchener South—Hespeler, Lib.): Thank you, Mr. Chair.

Thank you to our witnesses today.

Mr. Marshall, I was wondering: How can support for citizen scientists and citizen science initiatives be embedded into the departmental processes to ensure ongoing support in maintaining institutional knowledge?

Dr. Shawn Marshall: In a sense it is embedded already in that we're using a lot of citizen science through both our own programs that we coordinate and through relatively formal partnerships right through to places where we're data mining but also feeding back on protocols. I think it's a place where there are a lot of horizons that are probably worth thinking about hard in terms of going forward.

With the power of social media and data mining and artificial intelligence, it's worth having a strategy of how best to work with citizen science and expand research and science capacity in this area. It's a pretty active area of concern. It's already very much built into some of our science programs. It's something that is likely to grow going forward.

Ms. Valerie Bradford: Thank you.

When we heard from Dr. Mona Nemer, she testified that the knowledge gathered by the indigenous communities belongs to the indigenous communities. They are the holders of the information.

Do we have that in your database at all? Do we get their permission so that we can utilize that?

Dr. Shawn Marshall: I'll have a couple of opening comments, and then I'll pass it on to Jennifer for input on this as well.

This is something that's very important to respect. In general, where we have indigenous partnerships, they do own the data. It's not going to be in our databases or publicly available except with their explicit, active ongoing permission. The default is that they have the ownership. That might get waived in certain cases, like the SIKU app, which we've already heard about, or some of the SmartICE programs where there are partnerships and they are very happy to share that information on sea ice thickness or whatever the observations might be. But it needs to come from those indigenous partners.

Jennifer, did you want to add on that?

Dr. Jennifer Provencher: Yes. It's a very important topic.

I would just echo what Mr. Marshall said. It's case by case. There are certainly several applications where that indigenous knowledge through those applications is available and public. When we have more specific codesigned programs, we strive to follow the OCAP principles so that the indigenous partners, when sharing that knowledge, can be involved in where that data goes, how it is stored and what it is used for. It is a very case-by-case basis. We take that into consideration when we are codeveloping and co-implementing programs.

• (1150)

Ms. Valerie Bradford: Thank you for that answer.

What amount of research funding do you provide annually towards citizen science initiatives, and what proportion of your overall research budget funds citizen science?

I'm directing that question to Dr. Marshall.

Dr. Shawn Marshall: We don't have rolled-up numbers on this, but we have some sense for specific programs. For instance, within CABIN, we've prepared a bit on this.

I might actually turn quickly to Arash Shahsavarani to speak on the financial commitments within the CABIN program, and then we'll go to Aura, with CWS, to speak a bit to finances there.

Dr. Arash Shahsavarani (Director, Water Quality Monitoring and Surveillance Division, Department of the Environment): The CABIN program itself is not necessarily a citizen science program, but because of the engagement there's a component that has that outreach and ensures standardization. We spend about \$30,000 out of a \$200,000 budget on CABIN annually to contribute towards that engagement, which includes citizen science. That's on average, and that just represents our ability within that \$30,000 to do the outreach, to provide training and to ensure the standardization of data that would go into the CABIN database.

Ms. Valerie Bradford: How do you assess the return on investment of funds allocated to citizen science initiatives?

Dr. Arash Shahsavarani: With respect to the CABIN program, we've estimated it to be about \$1,000 per sample or data generated, which basically means that, on an annual basis, we get a return of about \$300,000 in terms of data that's generated that would go into the database. That's an estimate, of course.

Ms. Valerie Bradford: Am I out of time?

The Vice-Chair (Mr. Corey Tochor): Yes, you are out of time right now.

Ms. Valerie Bradford: Thank you.

The Vice-Chair (Mr. Corey Tochor): We're now moving on to our rounds of two and a half minutes.

MP Blanchette-Joncas, please go ahead.

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you, Mr. Chair.

My questions are for Ms. Loth-Bown, from Parks Canada Agency.

We had the privilege of having Canada's chief science advisor here on February 2, and she talked to us about direction. She said we should consider citizen science as an integral part of our strategies to empower individuals and communities, build trust in our institutions, and sustain our democracy.

I find that interesting. It's still ambitious, but it's really interesting.

On your end, how do you think you can meet such expectations and goals?

Ms. Christine Loth-Bown: Thank you for your question.

Citizens certainly have a big role to play in collecting data and gathering information for science.

As we explained, right now, we have three national programs. There are also many examples of initiatives that communities are doing with our management units across the country.

So there are many ways for us to expand our partnership with citizens across Canada.

Mr. Maxime Blanchette-Joncas: Thank you very much.

In your presentation earlier, you mentioned that right now there isn't really a way to integrate citizen science data into your processes.

Can you elaborate on your thoughts on that? In what ways would it be possible now to consider data that comes from citizen science?

Ms. Christine Loth-Bown: Certainly.

Parks Canada is required to provide parliamentarians with annual reports on the state of conservation of our natural and cultural sites. To do so, this data must be truly accurate.

[English]

In the parliamentary reporting, we need to make sure all the data is verified. There's a large opportunity in the future to use citizen data in these reporting requirements. That being said, we need to make sure we go through the rigour and analysis that's necessary. There's an opportunity to use that data more fulsomely, but at the same time, we need to make sure we have standard requirements. That would be the gap at this point in time.

In terms of having pilot projects across the country, we need to make sure that in our national reporting that we have national data points. That's an area where we would need to expand as an organization as we get further take-up of our citizen science programs across the country.

• (1155)

[Translation]

Mr. Maxime Blanchette-Joncas: Thank you very much.

To understand properly, I would like to ask you two questions in one.

[English]

The Vice-Chair (Mr. Corey Tochor): Our time is up, unfortunately. You had 12 extra seconds there.

We're moving on to MP Cannings for two and a half minutes.

Mr. Richard Cannings: Thank you.

I'd like to take this opportunity to ask Environment Canada... There have been a couple of Conservative questions here about the impact of wind turbines. I know Environment Canada has data on that in terms of bird populations because a few years ago they did a study that looked at all the direct, human-caused mortality of birds.

Could I ask Environment Canada to find that data and provide that to the committee? I know it's there. I've seen the papers. It has other impacts such as direct mortalities caused by oil sands and intensive agriculture, so it puts everything in perspective. I think we would benefit from that. I don't know how much it has to do with citizen science, but that's what they seem interested in, so I would ask Environment Canada to provide that in writing.

With the 30 seconds I have left, I'll turn it over to Dr. Marshall to talk about any citizen science projects that we haven't heard about in too much detail. You mentioned SmartICE and CABIN. Would you like to spend the time telling us about those projects?

Dr. Shawn Marshall: Thank you for this great invitation. We'll certainly follow up with the provision of the information on the studies on bird mortality and the different sources of that. Those papers are out there. You're right that they tend to be more professional science research papers, rather than citizen science projects assessing bird mortality, but those studies are there, including our own studies on this.

There's not much time, but I think a couple of really interesting projects are coming out of the meteorological service of Canada, by your invitation.

One of them is called CoCoRaHS. It's a community consortium on rain, hail, snow and precipitation measurements. I should have thought of that when we were asking about the agricultural applications, because there's lots of engagement with farmers in that context, of course. They care a lot about the rainfall patterns. It's really bottom-up, grassroots-driven observations of detailed precipitation patterns. That data flows into the meteorological service to help us understand and interpret the forecasts in extreme weather, after the fact.

There are programs like that coming in and being standardized across the country, which are very interesting for us to tap into.

Mr. Richard Cannings: Thank you.

The Vice-Chair (Mr. Corey Tochor): Thank you so much to our witnesses.

We will now briefly suspend before resuming in camera.

I'd ask all witnesses and guests to please leave the meeting. I wish them a very happy rest of their day today.

[Proceedings continue in camera]

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