

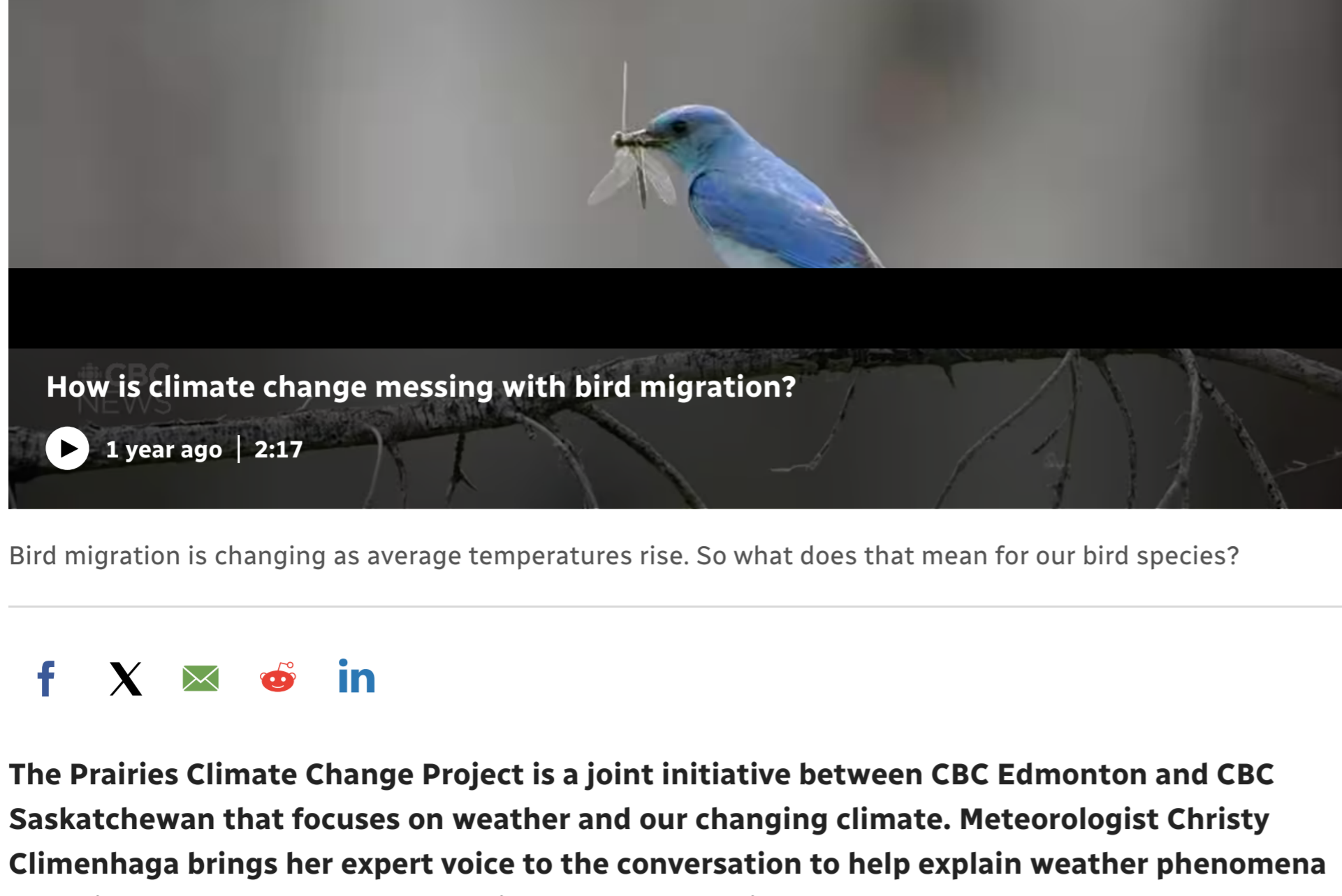
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Edmonton · CBC Explains

Climate change is impacting bird migration patterns. Here's what we know

'Birds are like the proverbial canary in the coal mine, telling us about climate change and its impact'

Christy Climenhaga · CBC News · Posted: Apr 17, 2023 3:00 AM CDT | Last Updated: April 17, 2023



Bird migration is changing as average temperatures rise. So what does that mean for our bird species?

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The Prairies Climate Change Project is a joint initiative between CBC Edmonton and CBC Saskatchewan that focuses on weather and our changing climate.

Spring is here and that means that birds are resuming their biannual international flights.

In Canada, almost three-quarters of our birds are migratory.

While some of these birds, like warblers and orioles, travel incredible distances to South America, others stay closer and escape the cold in the United States — our robins, blackbirds and waterfowl like mallards.

Migration is something we can count on in Canada, but as our average temperatures rise and we see more extremes in weather, our winged friends are not immune to the changes.

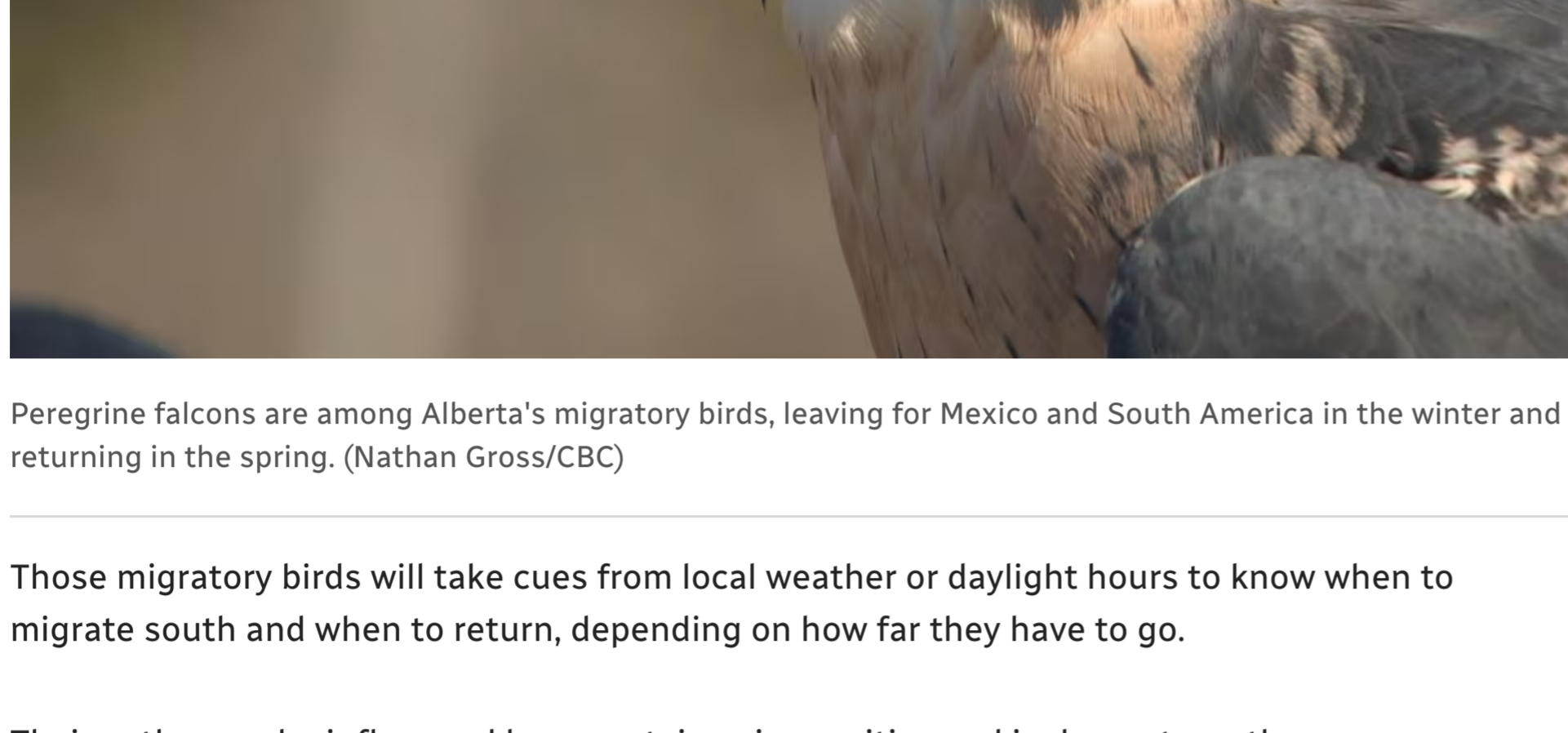
So how has climate change altered migration on the Prairies so far, and what can we expect in the future?

Alberta's trends

Albertans are no strangers to cold weather, and many of our bird species leave in the winter months for warmer climates.

"Only the hardest birds like magpies and even though they're tiny, chickadees, have ways to cope with the cold," said Geoff Holroyd, chair of the Beaverhill Bird Observatory east of Tofield, Alta.

"There's several hundred species that migrate."



Peregrine falcons are among Alberta's migratory birds, leaving for Mexico and South America in the winter and returning in the spring. (Nathan Gross/CBC)

Those migratory birds will take cues from local weather or daylight hours to know when to migrate south and when to return, depending on how far they have to go.

Their paths may be influenced by mountains, rivers, cities and inclement weather.

But as our climate changes, those migration patterns are being interrupted.

"[Some] birds are arriving earlier because of our earlier spring temperatures ... our mountain bluebirds are now arriving 19 days earlier than they did 60 years ago," said Holroyd, who has been studying Alberta's birds for about four decades.

And in the fall, Holroyd said he has noticed later trends with birds leaving.

"Saw-whet owls that we catch at our Beaverhill Bird Observatory are migrating late ... one and a half days per decade later," he said.



Saw-whet owls are migrating later than they used to because of milder fall temperatures, according to Geoff Holroyd. (Submitted by Chris Ryan)

The risks with these changes come with our variable weather, according to Holroyd.

"If the bluebirds arrive early and get hit with a late snowstorm, then they could be in trouble. It can kill them," he said.

"With the owls, if they get caught with an early snowstorm in the fall and they've been tricked into thinking they can stay and migrate later, that can also get them in trouble."

Holroyd says this past fall in Alberta was a perfect example, with record warm temperatures in October followed by extreme cold early in November.

"If one is a bird basking in that warmth and suddenly finds themselves in the cold, they may or may not have the energy reserves to get the heck out of here if they have to."

All about timing

Migration timing is critical for species, especially when birds arrive back in Canada in the spring.

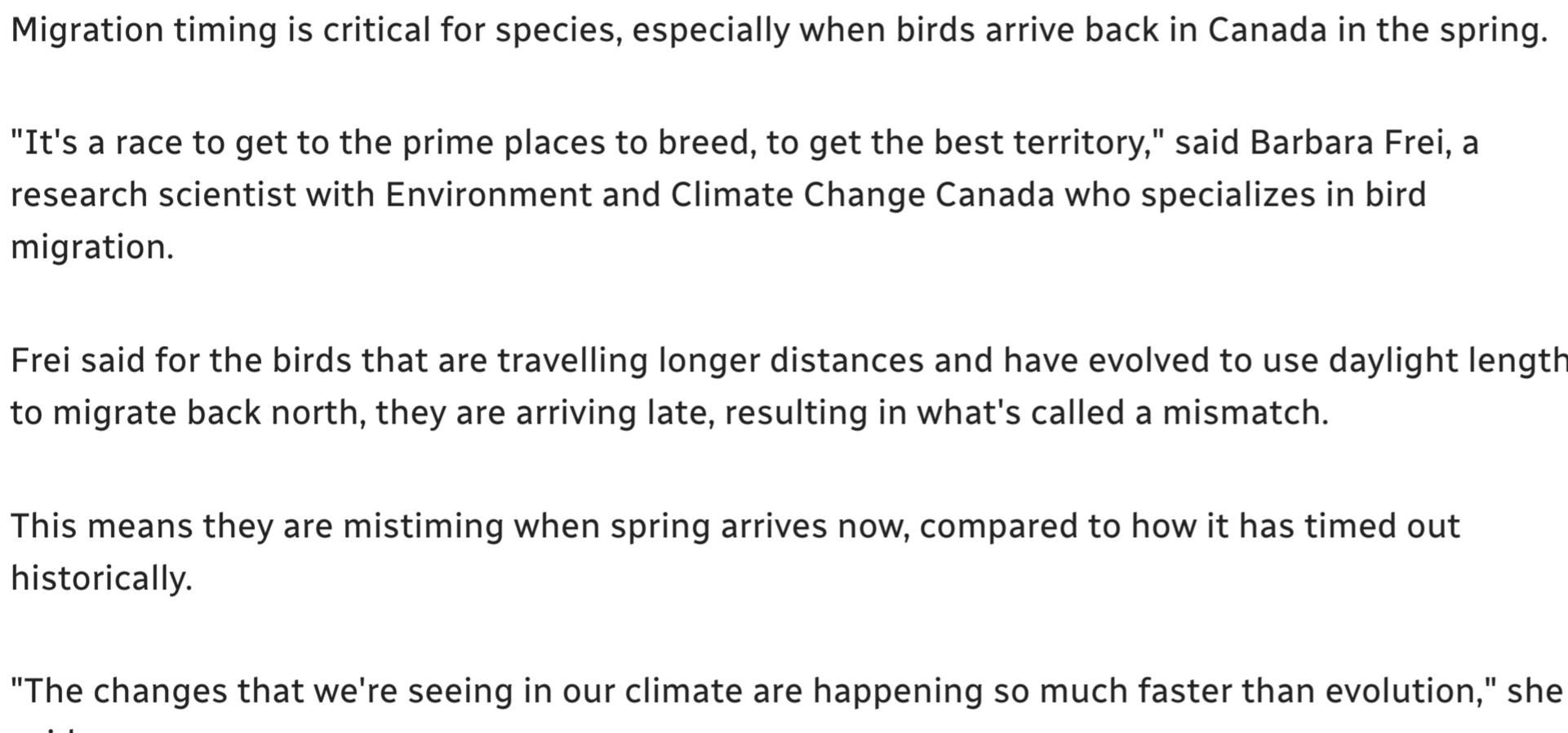
"It's a race to get to the prime places to breed, to get the best territory," said Barbara Frei, a research scientist with Environment and Climate Change Canada who specializes in bird migration.

Frei said for the birds that are travelling longer distances and have evolved to use daylight length to migrate back north, they are arriving late, resulting in what's called a mismatch.

This means they are mistiming when spring arrives now, compared to how it has timed out historically.

"The changes that we're seeing in our climate are happening so much faster than evolution," she said.

"They're coming to what they expect to be in early spring ... and they find that they're already weeks late sometimes and they just can't catch up fast enough."



The Canada warbler is one of our long distance migrators, travelling thousands of kilometres to South America over the winter. (Submitted by Alexander Jardine)

Frei said those birds are often unable to build their nests fast enough. They compensate by trying raise to their young quickly to hit the peak insect populations. And temperatures can be much too hot.

"Some species are just trying to deal with this by going further and further north," she said.

"Sometimes they're going to be pushing into places that just don't have the right habitat for them."

She said some birds will begin to move higher up into the mountains in search of cooler temperatures, but these changes in location can mean new dangers and competition for them.

"That kind of that continued mismatch — it's just kind of like a picture where you start picking pieces out of and after a while you, you don't have the full picture anymore."

Challenges beyond migration

Frei said that along with migration changes, the birds themselves are starting to evolve to warmer temperatures.

"They are becoming smaller and with longer wings," she said. "Maybe it's making them better at flight, maybe they're better at regulating their heat in these really hot conditions."

Those types of changes can have pros and cons. Birds might have better flight ability in warmer temperatures, but less energy in reserve than what they would have had historically, according to Holroyd.

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The habitats for these birds are changing too, including what insects and what kinds of trees are around.

The effects are both interconnected and cumulative, Frei said.

"When you're putting one layer, one layer and one layer on top, how do those layers interact? And how can species deal with all those different challenges at once?"

Moving forward

While change is already happening, Frei said there are ways to help birds through these challenges, and our cities are front and centre.

"Cities are already attracting birds because of our lights. So we know birds are kind of brought into cities as they migrate through these areas," she said.

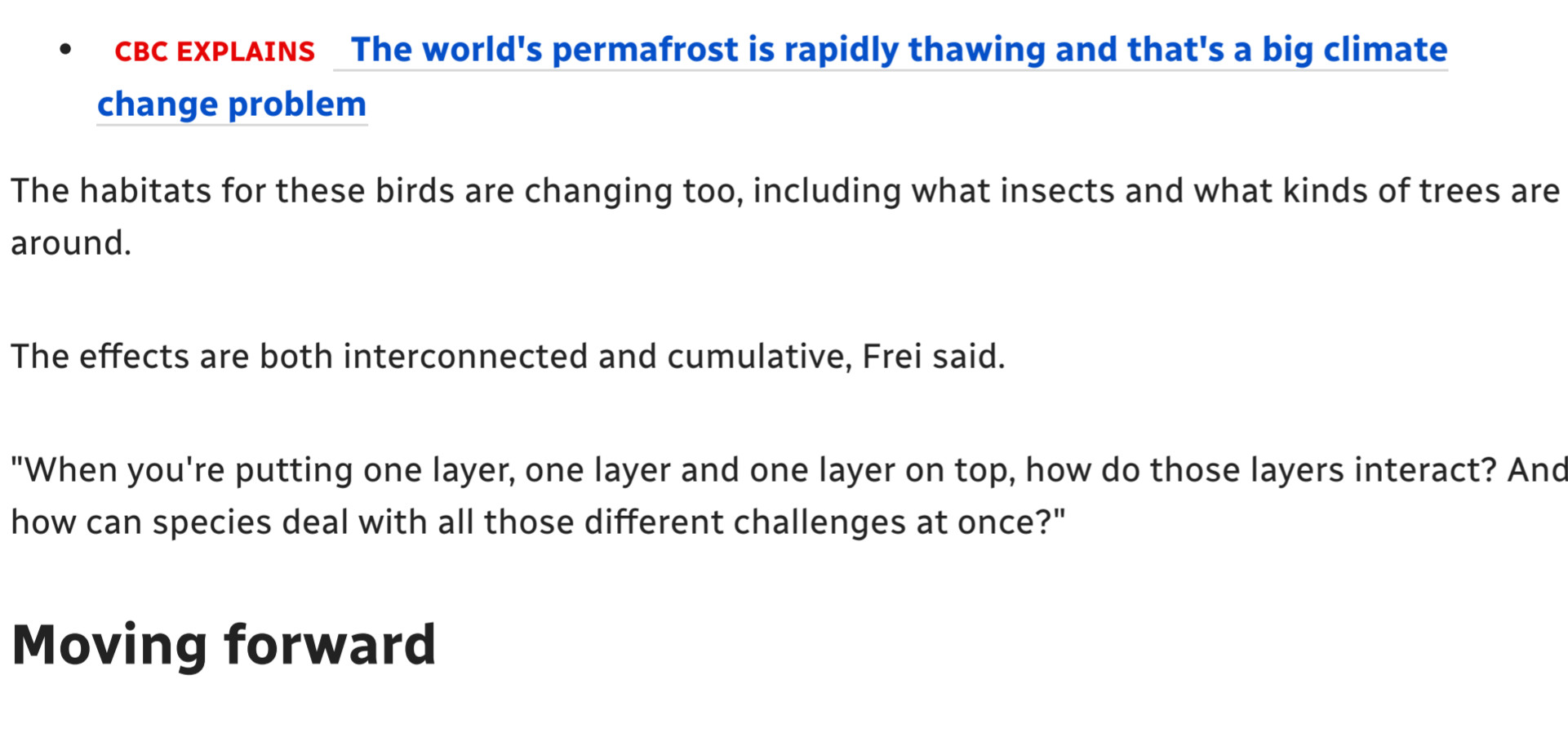
These cities can bring risks to birds, like buildings and cats, but cities can also provide refuge for birds as they pass through.

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"Green areas that we have in cities provide a kind of a resting place for these birds which are already facing all these different challenges," she said.

"We can provide these little protections that are going to help buffer some of these large-scale challenges, like climate change, that birds are facing."

Holroyd adds that understanding our birds and changes to their migration are key to monitoring the larger-scale changes happening on our landscape.



Geoff Holroyd, chair of the Beaverhill Bird Observatory, looks through a pair of binoculars at birds flying on Beaverhill Lake. (CBC)

"We have thousands of birdwatchers that can report what they're seeing, and then that data can be analyzed," he said.

According to Holroyd, that means scientists are better able to gain an understanding of what's happening to our birds and what that says about the rest of the ecosystem.

"That's an easy indication of what's happening to our trees, to our soil, to the insect life that is more difficult to monitor with fewer people monitoring them," he said.

"The birds are like the proverbial canary in the coal mine, telling us about climate change and its impact then on the environment."

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ABOUT THE AUTHOR

Christy Climenhaga, CBC Meteorologist

Christy Climenhaga is a meteorologist and CBC Edmonton's climate reporter, covering the impacts of climate change for the Prairies. She has worked as a CBC on-air meteorologist for more than 10 years, in the North and Saskatchewan. Have a climate question? Reach out at christy.climenhaga@cbc.ca.

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