OTHER

Is NB holding the line against a spruce budworm invasion?

TIM JAQUES | The Tribune
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Rob Johns, a forest insect ecologist at Canadian Forest Service in Fredericton, and a researcher working with the Healthy Forest Partnership.
Photo: Brunswick News archive

Is New Brunswick managing to hold back an invasion of spruce budworm moths?

A swarm of spruce budworm moths that crossed into New Brunswick from Quebec on July 24, 2016 seems to have placed larger numbers of the destructive creature in areas outside Restigouche County, where researchers had already been working on stopping existing "hot spots" from spreading.

However, a researcher who has been working on the spruce budworm problem for a few years says it is too early to tell if the eggs laid by the invading moths will result in a larger infestation in the province in the long run.

Rob Johns is a forest insect ecologist at Canadian Forest Service in Fredericton, and a researcher working on a Healthy Forest Partnership (healthyforestpartnership.ca) project to prevent spruce budworm populations in New Brunswick from growing into a threat like that faced in the 1970s.

The partnership is a consortium of forestry businesses, government and academia.

The spruce budworm is native to much of North America. It turns into a moth, but while it is still at the larval or caterpillar stage, it eats needles off conifers, mainly fir and spruce.

Prior to July 24, 2016, Johns and his colleagues had been working in so-called "hot spots" in Restigouche County, where numbers of the larvae were high enough to warrant concern that a much larger outbreak could occur, such has happened in past decades in New Brunswick when millions of hectares were denuded by the insect when it is in its caterpillar stage.

There is a large outbreak in neighbouring Quebec, where over six million hectares are affected. While the spruce budworm is always in New Brunswick, the hot spots may have been caused by moths coming in from over the border. The plan was to control these small hot spots with insecticide before they spread.

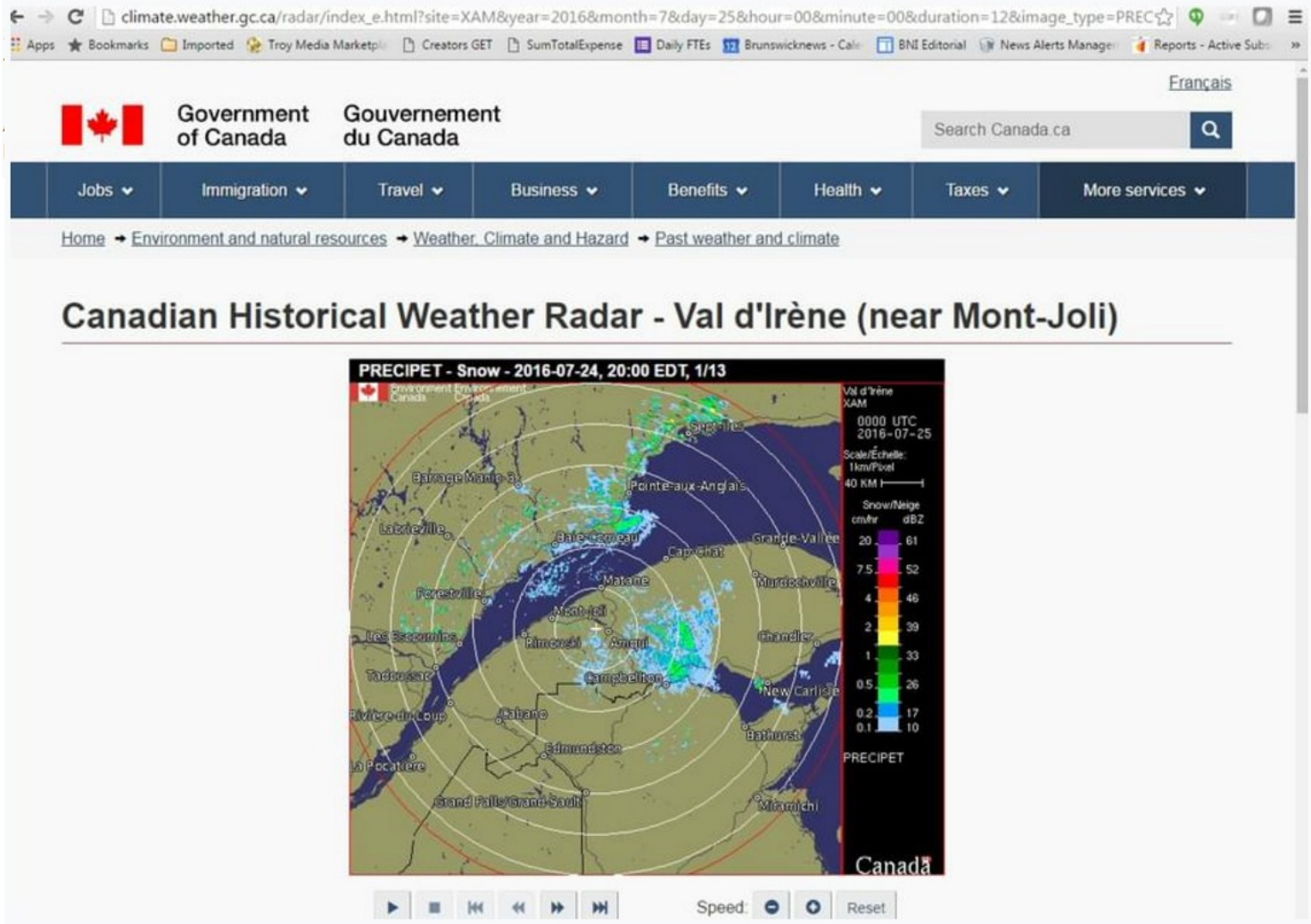
On July 24, a massive swarm of millions of moths flew into New Brunswick. An Environment Canada radar map actually mistook the moth swarm for snow. The moths were visible in the Campbellton-Dalhousie area, particularly at a car dealership in Campbellton where heaps of the dead moths attracted by the bright lights littered the ground the next day.

The Healthy Forest Partnership has a Citizen Scientist program, whereby people across the province are given moth traps, which they then send on to the researchers. Right now, Johns and his colleagues are analysing results from that effort to see the extent of the July 24 invasion of moths.

"We are just finishing processing some of our Citizen Scientist moths. We have 400-plus points of trends that are indicating whether or not we have migration," said Johns on Feb. 9.

They have also reviewed the radar from July, 2016, which showed the mass of moths which swept along the east coast of New Brunswick and down towards Prince Edward Island.

He said that the big concern with this mass dispersal of moths was that the budworm will now spread “and we would be completely swamped throughout New Brunswick”.



This July 24, 2016 Environment Canada radar mistook the swarms of moths heading into the Campbellton area for snow.
Photo: Submitted

Some hot spots were found near Campbellton “and those ones were put there by these dispersing moths. There is obviously some effect from it.”

As one moves away from the Campbellton area towards Bathurst and a lesser extent, Miramichi, there was a “peppering” of new points of higher concentrations of the budworm, and “there is definitely more than there was the previous year.”

“But it is still mainly concentrated in the area that we are trying to intensively manage. It is larger than we may have anticipated, but it was predictable based on that dispersal event. Certainly it is not overwhelming for the framework of the program.”

He said that researchers have also been collecting larvae over the winter.

“We go and collect branches, and we can get a very accurate count of how many there are actually out there. They are still mainly concentrated in the north. There is nearly nothing found south of Miramichi.”

Nonetheless the expansion caused by the dispersal migration is one reason Johns is happy to see the province provide $2-million for the project, announced in the Feb. 7 budget speech, with the federal government apparently going to provide more. He said this will help in the research and the fight to control hot spots, as there is now an expanded research and plot area because of the moth invasion. There are additional "hot spots".

Johns said that because of the July 24 event, another 50 plots were added for research purposes.

He said that the “vast” dispersal event was “unusual in the range which it covered. It is not something you would predict to happen every single year.”

"The question we still have is, we had the moths coming into the area and you have additional larvae, but will these end up doing well there? Because the nestings are still quite low."

In the spring, researchers will determine if these populations actually “stick” and become self-sustaining, or dissipate due to various natural factors.

He said if they don’t just dissipate, perhaps through natural predators, researchers can use the insecticides to push the numbers down further.

“We can basically recapture those areas.”

The insecticides used are Btk (short for *Bacillus thuringiensis var. kurstaki*), and Mimic. Both are used in residential settings and in organic farming.

The first is a naturally occurring bacterium that kills the caterpillars, and has been used for years to kill tent caterpillars.

The second is a natural insect growth regulator that disrupts the caterpillar's regular growth pattern.

Because of the ongoing large outbreak in Quebec, “New Brunswick is going to be constantly inundated with moths.”

“Some of those will be laying eggs, and the question is to what extent can we mop up those individuals as they drop into the north of New Brunswick.”

The Quebec outbreak is so large that it is difficult to control, so the New Brunswick effort is to prevent it from spreading here.

Eggs hatch in the fall. As it gets warm in the spring, the larvae come out and start feeding on the new buds. That’s when researchers like to get out to see how many larvae survived.

Certain birds eat the spruce budworm, both caterpillars and moths, and some even specialize in them. These birds may increase in number with a greater food supply, but the insects will always increase faster than the birds. The birds only increase their population up to a certain point.

Birds tend to be territorial, so they will keep a territory for themselves that contains more budworms than they could possibly eat. However, if the populations of spruce budworm are kept low enough, the birds can finish off what’s left.