Maine Forest Products Council

The voice of Maine's forest economy

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Testimony in Support of LD 209

"An Act to Make Supplemental Appropriations and Allocations from the General Fund and Other Funds for the Expenditures of State Government and to Change Certain Provisions of the Law Necessary to the Proper Operations of State Government for the Fiscal Year Ending June 30, 2025"

Tuesday, January 21, 2025
Krysta West, Deputy Director

Good afternoon, distinguished members of the Appropriations and Financial Affairs Committee and Agriculture, Conservation and Forestry Committee. My name is Krysta West. I am from Readfield and am here today to testify on behalf of the Maine Forest Products Council in strong support of Part U of the Supplemental Budget, LD 209, which includes $2 million to "address the management and early intervention of Spruce Budworm."

For 65 years, the Maine Forest Products Council has served as the voice of Maine's forest economy, representing more than 300 members from all facets of the forest products industry. Our members include pulp and paper mills, sawmills, secondary wood processors, foresters, loggers, truckers, large landowners and more.

Simply put, for our members, the funding included in Part U will likely be the most important, consequential legislation this session. We are thankful that Governor Mills agrees on the profound need for urgent funding targeted at this issue.

One of the most damaging forest pests in North America, the Spruce Budworm is normally present at low levels controlled by natural predators, but every 40 years or so, populations quickly spike to outbreak levels. Spruce Budworm larvae feed on the buds and needles of balsam fir and spruce trees. If left untreated over a period of a few years, mortality rates are very high (84-97% for balsam fir and 30-66% for spruce). During our last outbreak in the 1970s and 1980s, Spruce Budworm destroyed more than 7 million acres of spruce and fir, costing the industry hundreds of millions of dollars. Efforts to salvage impacted stands before they were lost to the bug were the impetus for the Forest Practices Act that shapes how our forests are managed to this day.

Now, here we are, just over 40 years since the end of the last outbreak, and, thanks to collaborative monitoring efforts, we can pinpoint exactly where we are on the population cycle of the Spruce Budworm. Last November, alarm bells were ringing as

samples indicated high overwintering larvae populations, otherwise known as “hot spots,” covering roughly 225,000-250,000 acres across much of the northwest border with Quebec and within the organized towns of the St. John Valley.

That’s the bad news. The good news is that, thanks to proactive monitoring efforts, we have been tipped off that at this very moment, we are on the cusp of a severe outbreak while the larvae are in a dormant state over the winter. Come May, however, they will emerge and begin feeding on host trees that, for some areas, if left untreated, will be going into a second year of heavy defoliation. The situation is dire, but it is not bleak, thanks to advancements in science since our last outbreak and the lived experience of our neighbors to the north.

Quebec has been battling an outbreak since 2006. Quebec’s management strategy has been to treat a small percentage of affected acres each year with insecticides. Under this strategy, the outbreak has expanded to 33 million acres. The province now is treating two million acres a year and losing millions of acres of trees. High tree mortality has contributed to wildfires (causing poor air quality days in Maine last summer), massive emissions of carbon into the atmosphere, and substantial lost economic and wildlife values. Unfortunately, the Quebec outbreak continues to fuel the supply of migrating moths into Maine.

New Brunswick has used a different approach called the Early Intervention Strategy (EIS). Under EIS, Spruce Budworm populations are closely monitored at the overwintering stage of its lifecycle. This information allows early detection and early intervention. As a result, Spruce Budworm populations in early treatment areas have decreased by 60-80%, reducing the size of the treatment area in 2024 from the initial program size of 400,000 to 13,000 acres.

EIS has proven to be a cost-effective approach to manage a building Spruce Budworm population that provides a stable wood supply while protecting habitats and preserving a healthy forest with minimal externalities. The cost of implementing this strategy in Maine this year is projected to be $15 million, a bargain when considering the potential loss of $794 million per year to our economy, as predicted by the Spruce Budworm Taskforce.

There will be others who speak behind me that can elaborate on the structure that has been put in place to coordinate and implement 2025’s EIS program, but I will take a minute to talk about the financial component. Thanks to Senator Collin’s swift action, the federal government included $14 million in the recent Disaster Relief bill for regional response efforts. With state and private match, this funding can be used to offset a substantial amount of the cost for implementing EIS in Maine this spring.

In closing, we may be at the cusp of a full-fledged Spruce Budworm outbreak, but this $2 million allocation will help us collectively prevent a $794 million problem with impacts that would touch each and every Mainer. For the health of our forests and for our rural communities, please vote **‘Ought to pass’** on LD 209 Part U. Thank you and I would be happy to answer any questions that you may have.

The $15 million **solution** to the $794 million **problem**

Why we must act now to stop the Spruce Budworm outbreak

What is Spruce Budworm?

The Spruce Budworm is a native moth that causes damage primarily to balsam fir and spruce species in Maine. Normally present at low levels controlled by its natural predators, periodically Spruce Budworms spike greatly. In Maine, outbreaks occur roughly every 40 years. This is now such a time.

Why is it a threat?

- Spruce Budworm is one of the most damaging forest pests in North America. Larvae feed on the buds and needles of host trees, which, left untreated for a few years, kills the trees.
- If left untreated, the tree mortality rate is 30-66% of spruce trees and 84-97% of balsam fir trees.
- Trees can withstand roughly three years of defoliation before they die.

What has happened before?

During the last Spruce Budworm outbreak, in the 1970s and 1980s, it destroyed more than 7 million acres of fir and spruce in Maine and the forest products industry lost hundreds of millions of dollars.

The tale of two Provinces – lessons learned from Canada's experience :

1 Quebec has been battling an outbreak since 2006. Quebec's management strategy has been to treat only 10% of affected acres a year. As a result, the outbreak there has expanded to 33 million acres. The province now is treating 2 million acres a year and losing millions of acres of trees yearly. The resulting high tree mortality has contributed to wildfires (causing poor air quality days in Maine last summer), massive emissions of carbon into the atmosphere, and substantial lost economic and wildlife values.

2 Fortunately, New Brunswick has taken a different strategy that is working. Called the Early Intervention Strategy (EIS), this approach closely monitors the Spruce Budworm "L2" populations (the overwintering stage of the SBW larvae). This information allows early detection and early intervention. As a result, Spruce Budworm populations in early treatment areas have decreased by 60-80%, reducing the size of the potential treatment area in 2024 from 400,000 acres to 13,000 acres[1].

How do I get more information?

Krysta West 207 622.9288 kwest@maineforest.org

Deputy Director | Maine Forest Products Council

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How does Maine track Spruce Budworm outbreaks?

Using the New Brunswick approach, landowners collect branches from their trees in the fall, after the Spruce Budworms lay their eggs. The UMaine Spruce Budworm Lab analyzes the branches for overwintering larvae. Following the EIS model, if the sample branches show concentrations of more than 7 larvae per branch, the area is recommended for treatment the following spring when the larvae emerge and begin feeding. If the branches have 3.5 to 7 larvae, the area is monitored closely.

The $15 million **solution** to the $794 million **problem**

What is happening in Maine's forests right now?

See the map

In the spring of 2021 and 2022 areas in the St. John Valley showing budworm defoliation were treated. This past summer (2024) aerial monitoring showed further defoliation in the St. John Valley and on the northwest border of Maine with Quebec. Landowners expected this fall's branch sampling to show that about 35,000 acres would require treatment.

Instead, the UMaine Spruce Budworm Lab has confirmed that roughly 147,276 acres of forestland in Maine, across many different ownerships, is above the EIS threshold of 7 larvae per branch. In addition, 71,254 acres of forestland are showing more than 3.5 larvae -- just below the treatment threshold. The UMaine Lab will update its projections as it processes more samples and hot spots are better defined.

What are the potential economic impacts of not responding to a Spruce Budworm outbreak?

The costs of doing nothing – or of acting too slowly – are heavy. A severe Spruce Budworm outbreak in Maine[2][3][4], which could cause a reduction of 494,000 cords of annual wood supply – equivalent to 40% of 2021 spruce/fir harvest – is projected to cost:

- **Loss of 3,865 direct and indirect jobs - 12% forest industry-related employment.**
- **$794 Million of annual economic impact -10% of $8.1 billion annual contribution to Maine's economy.**

What can we do to stop it?

- It is crucial to act now, both to prevent mortality to our impacted forestland, and to stop the rapid growth of the outbreak.
- Early Intervention is straightforward. There are two choices of pesticide *(described in companion handout)* that will reduce the populations to endemic levels. The cost of implementing the EIS strategy to treat an estimated 250,000 acres in Maine in 2025 is $15 million. The Spruce Budworm Taskforce in 2016 estimated the cost of leaving a severe outbreak untreated to be $794 million.
- The Maine Forest Service, coordinating with landowners and other partner groups, will oversee implementation of the response program.

How do I get more information?

Krysta West 207 622.9288 kwest@maineforest.org

Deputy Director | Maine Forest Products Council

1 "Spruce Budworm in Maine 2019-2024" presentation – Maine Forest Service – FRA Forestry Forum Meeting

2 Wagner, R,G et.al. 2015 Coming Spruce budworm Outbreak: Initial risk Assessment and Preparation and Response Recommendations for Maine's Forestry Community. Cooperative Forestry Research Unit, University of Maine, Orono

3 Chang, W.Y., V.A. Lanz, C.R. Hennigar and D.A. MacLean. 2012. Benefit-cost analysis of spruce budworm control: Incorporating market and non-market values. Journal of Environmental Management 93:104-112

4 Hennigar, C.R., J.S. Wilson. D.A. Mclean and R.G. Wagner. 2011. Applying a spruce budworm decision support system to Maine: Projecting spruce-fir volume impacts under alternative management and outbreak scenarios. Journal of Forestry 9: 332-342

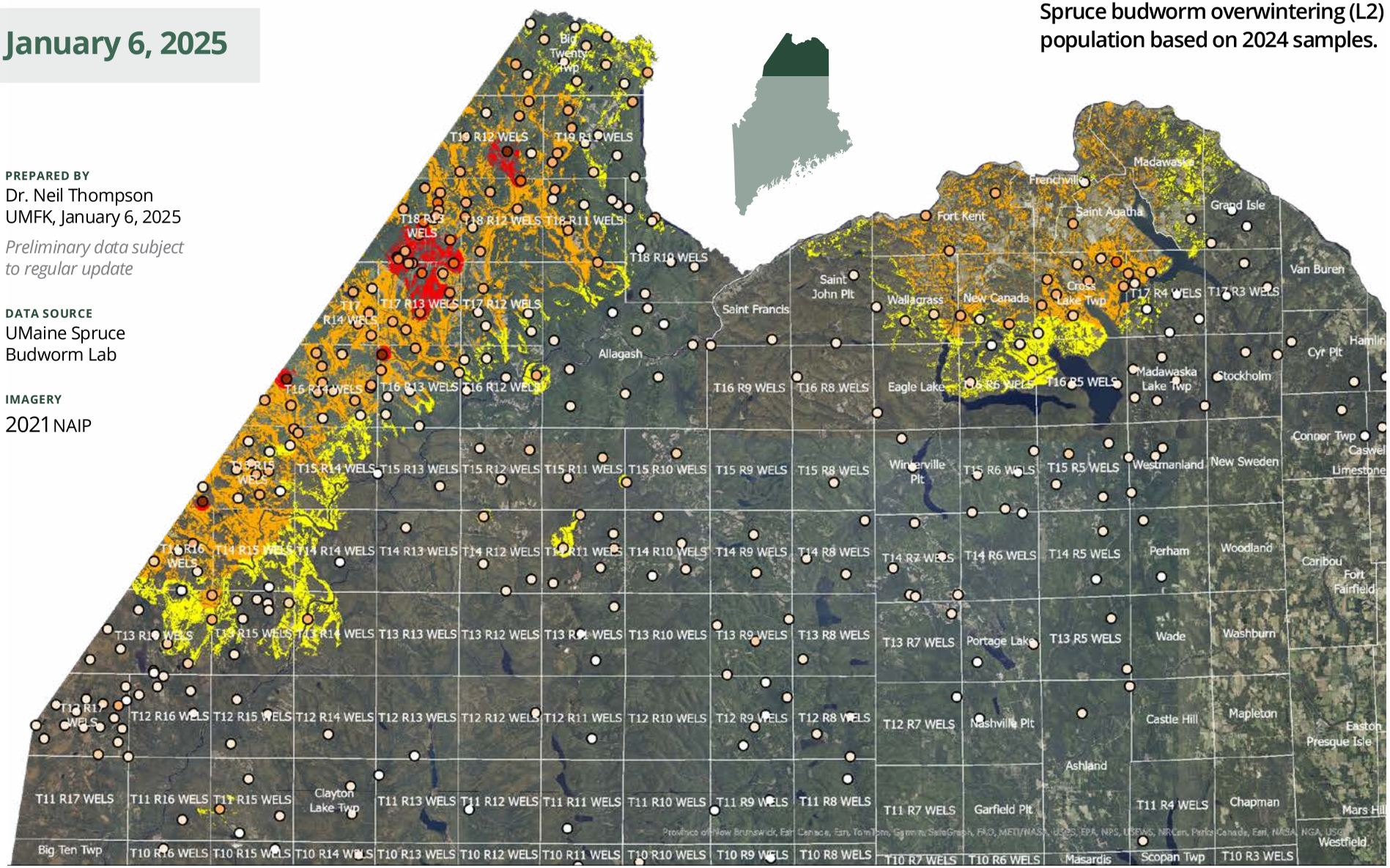
January 6, 2025

Spruce budworm overwintering (L2) population based on 2024 samples.

PREPARED BY
Dr. Neil Thompson
UMFK, January 6, 2025
Preliminary data subject to regular update

DATA SOURCE
UMaine Spruce Budworm Lab

IMAGERY
2021 NAIP



Larvae Overwintering Per Branch For 2025 Feeding

- 0
- 0.1 – 3.5
- 3.51 – 6.5
- 6.51 – 40.5
- 40.51 – 60.5
- 60.51 – 75.0
- 75.1 – 90.5
- 90.51 – 110.67

Interpolation based on 439 Completed Points

- > 40.5 L2/Branch *12,339 Acres*
- 6.5 – 40.5 L2/Branch *134,947 Acres*
- 3.5 –6.5 L2/Branch *71,254 Acres*

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*See **sprucebudwormmaine.org/map/** for last year's data in Maine and Canada.*

Stopping the Spruce Budworm is about early **detection & intervention**

What is Spruce Budworm?

- The Spruce Budworm is a native moth that causes damage primarily to balsam fir and spruce species in Maine. In Northwest Maine, the budworm is rapidly spiking in population.
- If not stopped quickly, it can devastate Maine's forests and our rural economy.

What is needed now?

- The key is early intervention. The Spruce Budworm can kill trees within three years of beginning to feed on the needles.
- Landowners collaborate with the UMaine Spruce Budworm Lab to track where the budworm population is expanding rapidly. This allows for narrowly focused, cost-effective and precise intervention.
- In the St. John Valley and on the northwest border of Maine with Quebec, treatment of an estimated 250,000 acres this spring is essential.

The cost of implementing the Early Intervention Strategy in 2025 will be $15 million → versus the potential economic cost of doing nothing:

$794 million.[1]

What are the treatment options?

There are two products that effectively control spruce budworm outbreaks:

Tebufenozide

A synthetic insecticide, branded as Mimic, kills larvae by causing premature molting. This insecticide is considered narrow spectrum because it only affects lepidopteran species and must be ingested by larvae to be effective (not a contact insecticide).

COST PER ACRE $45

ENVIRONMENTAL IMPACTS

"Mimic does not directly affect beneficial insects such as wasps, mites and spiders, all of which help keep forest insect pest populations in check. It affects lepidopteran larvae only. This makes it is especially suitable for Integrated Pest Management programs in forestry... Mimic poses little or no measurable risk to bees, birds, fish, mammals and non-lepidopteran insects. It also has no impact upon shrimp, crayfish and lobsters. Mimic adheres strongly to soil particles until it is reduced by microbial and chemical actions. It is therefore almost immobile in soil, with low risk of leaching into water." [2]

BtK

An organic insecticide derived from a soil bacterium that kills larvae by physically destroying the gut after ingestion and causing infection. This insecticide is considered narrow spectrum because it also only affects lepidopteran species and must be ingested to be effective (not a contact insecticide).

COST PER ACRE $90

ENVIRONMENTAL IMPACTS

"Numerous studies have shown BtK to be very low risk to human health. BtK only impacts caterpillars and will not harm other beneficial insects such as bees, lady beetles, ants or parasitic wasps. It is also not harmful to animals, birds or fish." [3]

How do I get more information?

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Deputy Director | Maine Forest Products Council

1 *https://maineforest.org/wp-content/uploads/2022/08/SBW_full_report_web.pdf*
2 *Natural Resources Canada - https://natural-resources.canada.ca/our-natural-resources/forests/insects-disturbances/forest-pest-management/controlling-forest-insects-mimicr/17645*
3 *Washington State Department of Agriculture https://agr.wa.gov/departments/insects-pests-and-weeds/insects/invasive-moths/btk/what-is-btk#:~:text=Numerous%20studies%20have%20shown%20Btk,to%20animals%2C%20birds%20or%20fish*

What are the environmental impacts and risks of doing nothing?

- While there are always risks associated with any pesticide application and not all areas are appropriate for treatments, there are clear risks of not acting swiftly and fully.
- An uncontrolled Spruce Budworm outbreak has the potential to damage millions of trees in Maine. Trees can only withstand roughly three years of defoliation before it results in mortality. During the last outbreak, the mortality rate of untreated spruce trees was between 30-66% and the mortality rate of untreated balsam fir trees was 84-97%.[4]
- Standing dead forests contribute to many negative environmental impacts, including:
  - » Degraded wildlife habitats for a whole host of land and aquatic species
  - » Significant wildfire risk
  - » Diminished water quality and higher water temperatures
  - » The loss of carbon sequestration

Who will apply and oversee the operation?

Maine Forest Service Spruce Budworm Task Force

- ✓ MFS, coordinating with other partner groups, will oversee implementation of the response program.
- ✓ The UMaine Spruce Budworm Lab provides critical monitoring and testing services to keep partners and the public up to speed on the current outbreak status in Maine.
- ✓ Landowners have formed the Maine Budworm Response Cooperative to allow for a coordinated, quick and efficient treatment response.
- ✓ Partners have engaged with our federal delegation and the Mills Administration to seek assistance with funding the 2025 EIS program.

4 *"Spruce Budworm in Maine 2019-2024" presentation by Maine Forest Service – FRA Forestry Forum Meeting*

Stopping the Spruce Budworm is about early **detection & intervention**

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Opinion: Maine must remain vigilant in protecting its forests

pressherald.com/2025/01/04/opinion-maine-must-remain-vigilant-in-protecting-its-forests

January 4, 2025

For thousands of years, the spruce-fir forests of our region have contended with the presence of the spruce budworm. While this native pest is always present to some level, every 30-40 years, its population explodes, causing widespread damage and mortality to our forests.

During the last severe outbreak in the 1970s and 1980s, the spruce budworm infestation caused widespread tree mortality across 7 million acres of Maine's forest. It cost our economy hundreds of millions of dollars and the ecological effects were also significant, with adverse impacts on wildlife habitats and biodiversity. There were social impacts as well, with the resulting debate over salvage clearcuts quite literally shaping how forestry is practiced today.

ABOUT THE AUTHOR

Alex Ingraham is president of Pingree Associates, which, together with Seven Islands Land Co., manages 820,000 acres of Pingree forestland in Maine. He serves on the boards of several nonprofit and landowner organizations across the country.

To many, that infestation feels like a relic of the past, but our neighbors to the north in Ontario, Quebec and New Brunswick have been contending with a serious infestation since 2006. Each province implemented vastly different response protocols, giving us valuable insight into how to deal with the current influx in Maine.

Quebec was slow to react, limiting its insecticide treatments to 10% of the outbreak area each year, seeking only to slow mortality enough to allow salvage. This approach has been ineffective. Now the affected area covers 33 million acres across Quebec and Ontario. The costly spray program has grown to 2 million acres annually, but it isn't working. Unfortunately, Quebec responded too late.

After successive defoliations, its forests have experienced extensive mortality. The result? Widespread forest fires (think back to all the low air quality days we experienced from wildfires in Quebec) and degradation of wildlife habitat and air and water quality. The economic damage will be felt for decades.

As Quebec was losing its budworm battle, New Brunswick implemented an early intervention strategy. This straightforward approach requires close monitoring of budworm populations to ensure early detection and swift intervention. After identifying "hot spots" each summer/fall, New Brunswick has responded the following spring with a highly targeted insecticide program that effectively returned budworm populations to normal endemic levels. By preventing outbreaks, it has maintained control of the budworm with minimal input and impacts.

With an uncontrolled infestation so close to the Maine border, landowners knew it was a matter of time before conditions aligned and a large flight of budworm moths from Quebec made it into Maine. To prepare, in 2013, the state formed the Spruce Budworm Task Force. Landowners, aided by the Cooperative Forestry Research Unit's (CRFU) Spruce Budworm Lab at the University of Maine, implemented a monitoring program.

This summer, landowners and state officials noted increased spruce-fir defoliation in areas of northern Maine. Weather radar also revealed that winds in late June directed a large budworm moth flight to our state. Going into the fall, landowners were concerned and expected the lab to document the budworm's presence in roughly 35,000 acres of forest. Unfortunately, we were wrong. Early samples from the lab indicated that the population levels were widespread. Landowners expanded their monitoring efforts, and current indicators predict elevated "hot spot" level budworm populations in approximately 250,000 acres of Maine's forest.

In response to this news, landowners took immediate action, pulling together to implement a coordinated response plan, in conjunction with the Maine Forest Service. We immediately got to work seeking funds to help offset the cost of implementing New Brunswick's proven early intervention strategy in time for the small but ravenous larvae to emerge and begin feeding in May.

We requested a meeting with Sen. Collins, and she acted quickly to include funds for this effort in the disaster relief legislation currently making its way through Congress. We are hopeful that this funding will be approved by the full U.S. Senate and House, and that the state of Maine will help landowners match these funds so we can tackle spruce budworm head-on.

The early intervention program won't be cheap, costing $15 million in 2025 alone. But failure to act will cost much more. If left untreated, the Spruce Budworm Task Force estimates that the current infestation could disrupt Maine's forest economy to the tune of $794 million annually, with budworm taking root far beyond northern Maine.

Please join us, the Maine Budworm Response Cooperative, in thanking Sen. Collins for her swift action to protect Maine's forests and our heritage industry. We are lucky to have her in our corner.

With advocates like Sen. Collins, the Maine delegation and Gov. Mills (and with a highly targeted early intervention strategy) we can keep Maine's forests healthy while protecting our rural economy. Let's learn from our neighbors to avoid history repeating.

filed under:
columns
Opinion: Weight-loss drugs are great, but real food still matters
Opinion: Social media drives eating disorders
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Budworms ravaged Maine’s forests for years. They’re starting to do it again.

pressherald.com/2024/11/18/budworms-ravaged-maines-forests-for-years-theyre-starting-to-do-it-again

November 18, 2024

A closeup of spruce budworm larvae and the damage it can do when it is feeding on the needles of a spruce or fir tree. *Courtesy of Maine Forest Service*

A spruce budworm outbreak has plagued Maine’s northern borders for nearly two decades, with the tree-killing moths making sporadic incursions from Quebec but never reaching numbers that suggest a repeat of the outbreak that ravaged the state a half-century ago.

This summer, though, state entomologist Michael Parisio's heart sank as he surveyed the northwestern woods of Aroostook County by plane. A 3,000-acre hotspot of partially denuded spruce-fir forest below suggested the once-a-generation outbreak everyone had feared may have begun.

The patch of defoliated trees near Little East Lake just east of the Canadian border was a sign the native budworm population had grown so large that its consumption of fir and spruce needles was visible from several thousand feet above the forest.

"We've had a few scares here and there, but 3,000 acres, that's significant damage," Parisio said. "That is a hotspot that won't go away in a year. All evidence suggests it will persist and expand. We knew it would get here eventually, but knowing doesn't make what's going to happen any easier."

The last outbreak lasted from 1967 to 1993, covering 136 million acres across eastern Canada and Maine. It stripped the needles from fir and spruce trees across most of northern Maine, killed between 20 to 25 million cords of wood, and cost the state's forest economy hundreds of millions of dollars.

Spruce budworm larvae leave behind partially eaten needles that dry out and turn a reddish-brown color in July and August, a telltale sign of an outbreak. This historic photo of the Allagash River during Maine's last spruce budworm outbreak shows extensive damage. *Courtesy of Maine Forest Service*

Maine hopes to avoid a repeat of that ruin through an aggressive whack-a-mole management approach.

The state has expanded its ability to look for cocooning budworms before they emerge in the spring and begin to feed, giving landowners time to spray the infested stands with just enough pesticide to return a hotspot to non-threatening levels that can be kept in check by weather and natural predators, like birds.

New Brunswick has used this early intervention strategy to stop Quebec-based budworms at its borders.

"Think of it like whack-a-mole," said Angela Mech, a University of Maine associate professor of forest entomology. "We try to hit it as soon as you see an uptick in the population, not after it explodes. That way we can contain it before it causes significant defoliation and creates a landscape of dead trees."

To do this, Maine opened the country's only spruce budworm lab, where limbs from hundreds of areas across Maine are taken each winter and inspected for signs of overwintering budworms: cocoons. Now dormant, those cocooned larvae emerge in the spring with a hankering for fir-spruce buds.

Seven or more cocoons per branch mean the limb collection area is at risk of defoliation in the spring. Mech will share the counts with landowners, who may decide to spray the area with pesticides that coat the needles and will kill enough of the emerging larvae to knock a hotspot back down to normal levels.

Using this strategy, Maine hopes to keep budworm hotspots from erupting into an outbreak, Mech said.

The eastern spruce budworm, or Choristoneura fumiferana, is a native species but can be hard to find outside of an outbreak. The dark brown caterpillar has light-colored spots on its back and a dark, shiny head. It grows into a small, half-inch moth with orange and brown wings.

Budworm caterpillars like to eat the buds off mature trees. They prefer balsam fir and white spruce, but when pressed they will eat other fir and spruce species, and older needles, too. Over time, trees don't have enough needles to convert sunlight into food and they die.

Trees that are damaged but not killed by budworms become more vulnerable to other insects such as bark beetles and wood borers and diseases like root rot, which can cause a decline in the commercial value of the trees and indirectly lead to their death.

In Maine, where a third of all forestland is comprised of spruce and fir, the budworm is big news. During the last outbreak, defoliation caused 84%-97% mortality in impacted balsam fir and 30%-66% mortality in impacted red spruce.

Economists focus on the financial impact of a budworm outbreak, which in the past sparked a rush to harvest spruce and fir before the trees died, a devaluation of the pulp market, and the loss of hundreds of logging jobs once the market collapsed. Foresters from that time refer to it as the Battle of the Budworm.

"It was the most significant economic event in the history of Maine's forest industry," Parisio said. "While it was concentrated in the north, the outbreak touched every corner in Maine. In some areas, everywhere you looked, all you could see were rust-colored trees."

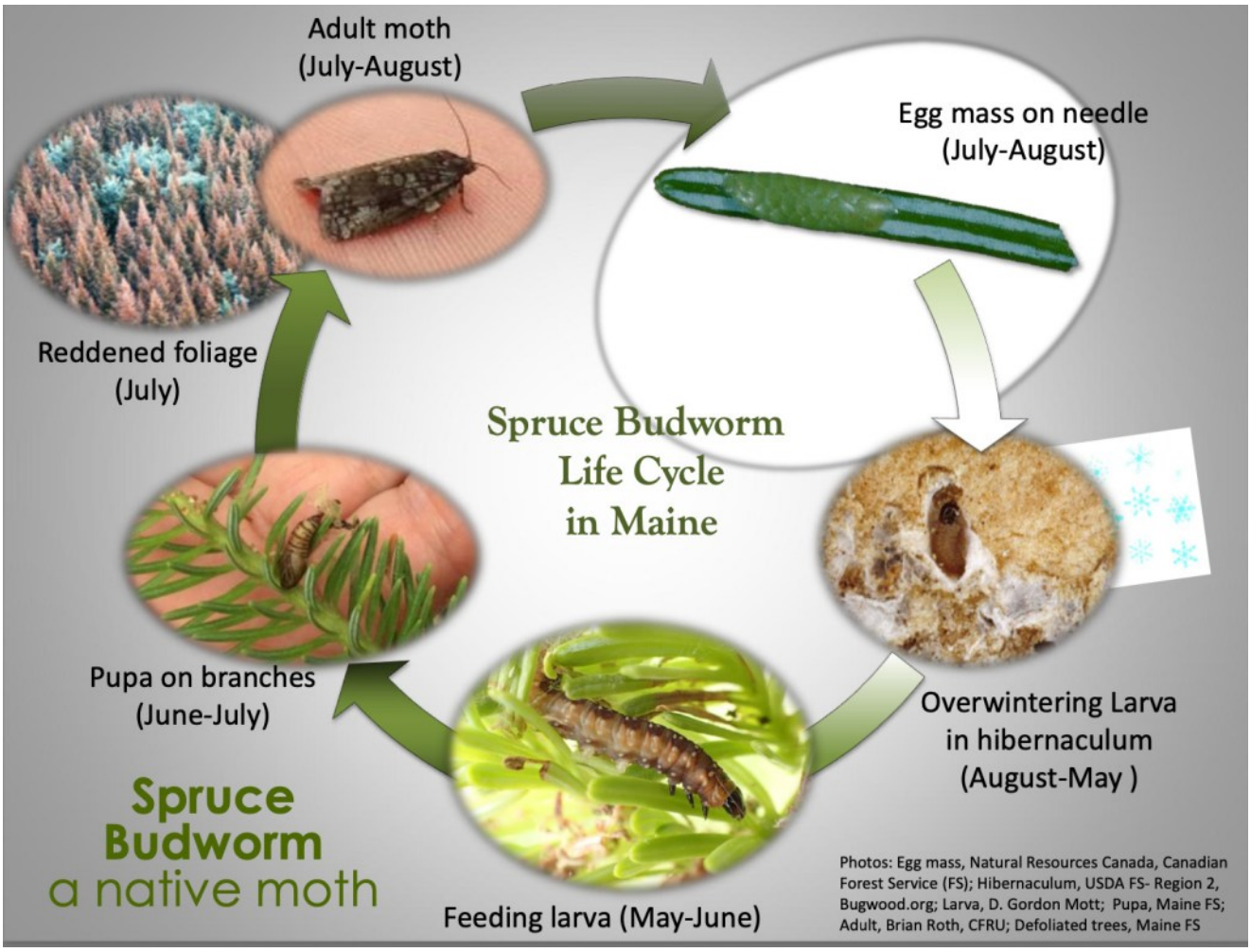
An outbreak could hurt Maine's wildlife, tourism, and its efforts to achieve carbon neutrality.

For example, the spruce-fir forests in Maine's colder, higher-elevation regions create unique habitats for Bicknell's thrush, which Maine added to its endangered species list last year. Also, fir and spruce forests provide critical deer wintering areas.

A budworm outbreak also could reduce the amount of heat-trapping carbon dioxide emissions removed from the atmosphere by Maine's spruce-fir forests by 5 to 16%, depending on the severity, according to Professor Adam Daigneault, director of the University of Maine's School of Forest Resources.

Such defoliation wouldn't affect Maine's efforts to hit its 2030 and 2050 carbon reduction goals, but it would make it harder for Maine to achieve carbon neutrality by 2045. Carbon neutrality is when the amount of carbon emissions is offset by the amount absorbed or removed by carbon sinks.

The budworm hotspots popping up in Maine now are connected to a massive outbreak in Quebec that began in 2006 on the north shore of the St. Lawrence River. A decade into the outbreak, the defoliated area in southern Quebec was the size of Maine. By 2020, over 33.5 million acres had been damaged.



The lifecycle of an eastern spruce budworm *Courtesy of Maine Department of Agriculture, Conservation and Forestry*

A decade of early intervention work kept the Quebec outbreak out of Maine. But in 2019, a large group rode high winds into Aroostook County. In 2021, aerial spotters found 850 denuded acres in northern Aroostook County in 2021. And in July, Parisio spotted 3,000 denuded acres near Little East Lake.

The Maine Forest Service can’t afford to survey the whole state by plane. Some years, the state can’t do them at all. Bad weather can ground planes during the critical larval feeding time. In 2023, smoke from Canadian wildfires obscured their view.

Models suggest the amount of fir and spruce acreage damaged by budworm feeding in 2024 is closer to ten times the 3,000 acres identified in the Maine Forest Service’s aerial surveying, according to Neil Thompson, associate professor of forestry at the University of Maine at Fort Kent.

Dead adult spruce budworm moths. The dark brown caterpillar with light-colored spots on its back and a dark, shiny head grows into a small, half-inch moth with orange and brown wings. *Courtesy of Maine Forest Service*

It is too early to estimate the size of Maine's spruce budworm population in 2025 from overwintering sampling because the state lab has only processed a third of the branches to be tested, Thompson said. But, he noted, local budworm hotspots appear to be persistent and expanding.

"We have a massive population across the border that is inflating our numbers, with probably half of our moths coming over from Canada and half expanding out from local hotspots," Thompson said. "But it kind of doesn't matter. The budworm doesn't stop at the border. Their problem is our problem."

A budworm moth can fly 20 to 30 miles on its own wing power, Thompson said, but a few good gusts of wind can expand its flight range to several hundred miles, putting Aroostook County within easy reach. Quebec City is less than 100 miles from the international border.

One grim upside of a potential invasion is that it may be the last budworm outbreak Maine will face. Maine is at the southern edge of the budworm's range. Thirty to 60 years after the coming outbreak ends, temperatures here will likely be too warm for the spruce budworm, Parisio said.

"Unfortunately, that will also be too warm for fir and spruce," he said. "I wouldn't call that a win."

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environment, maine forest service
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