



# 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 :

🍁 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.

🍁 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<sup>1</sup>.

### How do I get more information?

Krysta West 207 622.9288 kwest@maineforest.org  
Deputy Director | Maine Forest Products Council

THIS INFORMATION IS SPONSORED BY:



## 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<sup>234</sup>, 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

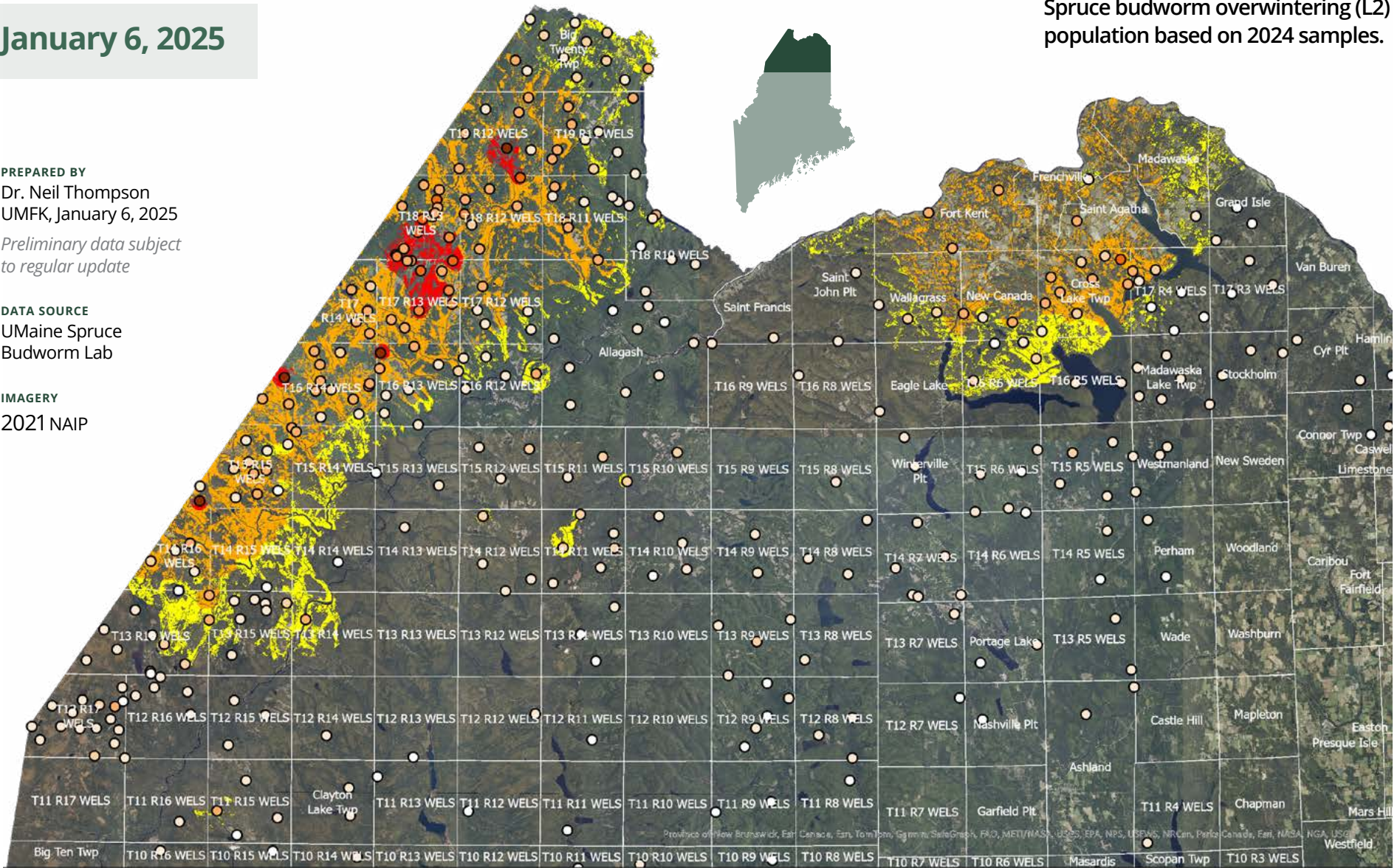
January 6, 2025

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

Krysta West | Deputy Director  
Maine Forest Products Council  
207 622.9288 kwest@maineforest.org  
See [sprucebudwormmaine.org/map/](https://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.**<sup>1</sup>

## How do I get more information?

Krysta West 207 622.9288 [kwest@maineforest.org](mailto:kwest@maineforest.org)  
Deputy Director | Maine Forest Products Council

## 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 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."<sup>2</sup>

### 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."<sup>3</sup>

<sup>1</sup> [https://maineforest.org/wp-content/uploads/2022/08/SBW\\_full\\_report\\_web.pdf](https://maineforest.org/wp-content/uploads/2022/08/SBW_full_report_web.pdf)

<sup>2</sup> Natural Resources Canada - <https://natural-resources.canada.ca/our-natural-resources/forests/insects-disturbances/forest-pest-management/controlling-forest-insects-mimicr/17645>

<sup>3</sup> 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%.<sup>4</sup>
- ▶ Standing dead forests contribute to many negative environmental impacts, including:
  - » Degraded wildlife habitats for a whole host of land and aquatic species
  - » Diminished water quality and higher water temperatures
  - » Significant wildfire risk
  - » 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.



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

Krysta West | *Deputy Director*  
Maine Forest Products Council  
207 622.9288 [kwest@maineforest.org](mailto:kwest@maineforest.org)

