

# Spruce budworm

## POPULATION & STATUS UPDATE FOR MAINE

based on the most recent estimates from the  
UMaine Spruce Budworm Lab

NOVEMBER 2024



### BUDWORM BACKGROUND

The Spruce budworm (*Choristoneura fumiferana*) is a native insect that can cause major damage to Maine's spruce-fir forests. Spruce budworm (SBW) larvae feed on the buds and needles of fir and spruce. Usually, populations of this insect are so low that SBW is hard to find. Periodically, SBW undergoes a population outbreak and becomes so abundant that serious feeding damage occurs. During the last SBW outbreak, in the 1970s - 80s, more than 7 million acres of fir and spruce were killed in Maine and the forest products industry lost hundreds of millions of dollars<sup>1</sup>.

### WHERE ARE WE TODAY?

Feeding from SBW larvae in the spring of 2024 caused defoliation that is observable from the air in areas of the St. John Valley and on the northwest border of Maine and Quebec (Photo 1 & 2). Defoliation at this scale can occur when the overwintering SBW larvae, better known as L2s, exceed 7 per branch per site (Figure 1). Hotspots are areas where the average density of L2s is greater than 7 per branch. Feeding damage on fir and spruce can weaken trees and if severe enough, can result in tree mortality.

### SBW POPULATIONS AS OF NOVEMBER 2024

As of November 2024 the SBW Lab has modeled that 178,160 acres of forestland in Maine are greater than the EIS threshold of 7 L2s per branch (Figure 1). An additional 77,553 acres of forestland are just below the EIS threshold. The map and projections will change as more samples are processed.

### THE UMAINE SPRUCE BUDWORM LAB: PROVIDING INFORMATION FOR ACTION

- To predict SBW populations for the following year, tree branch samples are collected in the fall and submitted to the [UMaine Spruce Budworm Lab](#) where the overwintering L2s are separated from the foliage and counted.
- An example of how L2 counts inform management action is the [Early Intervention Strategy \(EIS\)](#), an applied research program in New Brunswick, Canada, where its application has been successful.
- EIS interrupts or delays a budworm outbreak by targeting building SBW populations (hotspots) with insecticides to reduce populations.
- Applying EIS treatments to areas with 3.5 L2s to 7 L2s per branch can increase treatment efficacy.
- EIS does not aim to eradicate SBW from the forest; it introduces enough mortality to reduce budworm populations below an irruption, or outbreak, threshold.
- Estimates of SBW levels based on L2 counts are critical for monitoring and responding to rising SBW populations with EIS.

## SPRUCE BUDWORM DEFOLIATION MAINE, JULY 2024



PHOTO 1, LEFT: N. THOMPSON, UMFK. PHOTO 2, RIGHT: M. PARISIO, MFS



### CFRU'S HISTORY WITH SBW

Created during the spruce budworm crisis of the mid-1970s, the CFRU was one of the earliest forest industry/university research cooperatives in the United States. Much of the CFRU research during the next 40 years was aimed at understanding the natural development of forests damaged by the spruce budworm outbreak, and the CFRU continues to lead the way in helping Maine prepare for and respond to the next spruce budworm outbreak. CFRU represents a diversity of forestry-focused organizations and includes industrial landowners, family landowners, NGOs, conservation organizations, mills and more. Our members manage over 8.5 million acres of forestland in Maine.

<sup>1</sup> *The Coming Spruce Budworm Outbreak, Initial Risk Assessment and Preparation & Response Recommendations for Maine's Forest Community*. Spruce Budworm Task Force Report, 2016.

# November 12, 2024



Spruce budworm overwintering (L2) population projection based on 2023 L2 data and field observations carried forward, replaced by 2024 data as it becomes available.

Data are available from much of northern Aroostook County and indicate a general increase in population size and extent. This map is updated weekly with new data.

Note that waterbodies, buffers on waterbodies and streams, remotely sensed hardwood stands, and farm fields have been removed to give an approximation of affected area.

Interpolation Based on 199 Updated Points

- >40.5 L2/Branch 20,287 Acres
- 6.5-40.5 L2/Branch 157,873 Acres
- 3.5-6.5 L2/Branch 77,553 Acres

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

Prepared by Dr. Neil Thompson  
UMFK, November 12, 2024  
Preliminary data for discussion only  
Imagery: 2021 NAIP

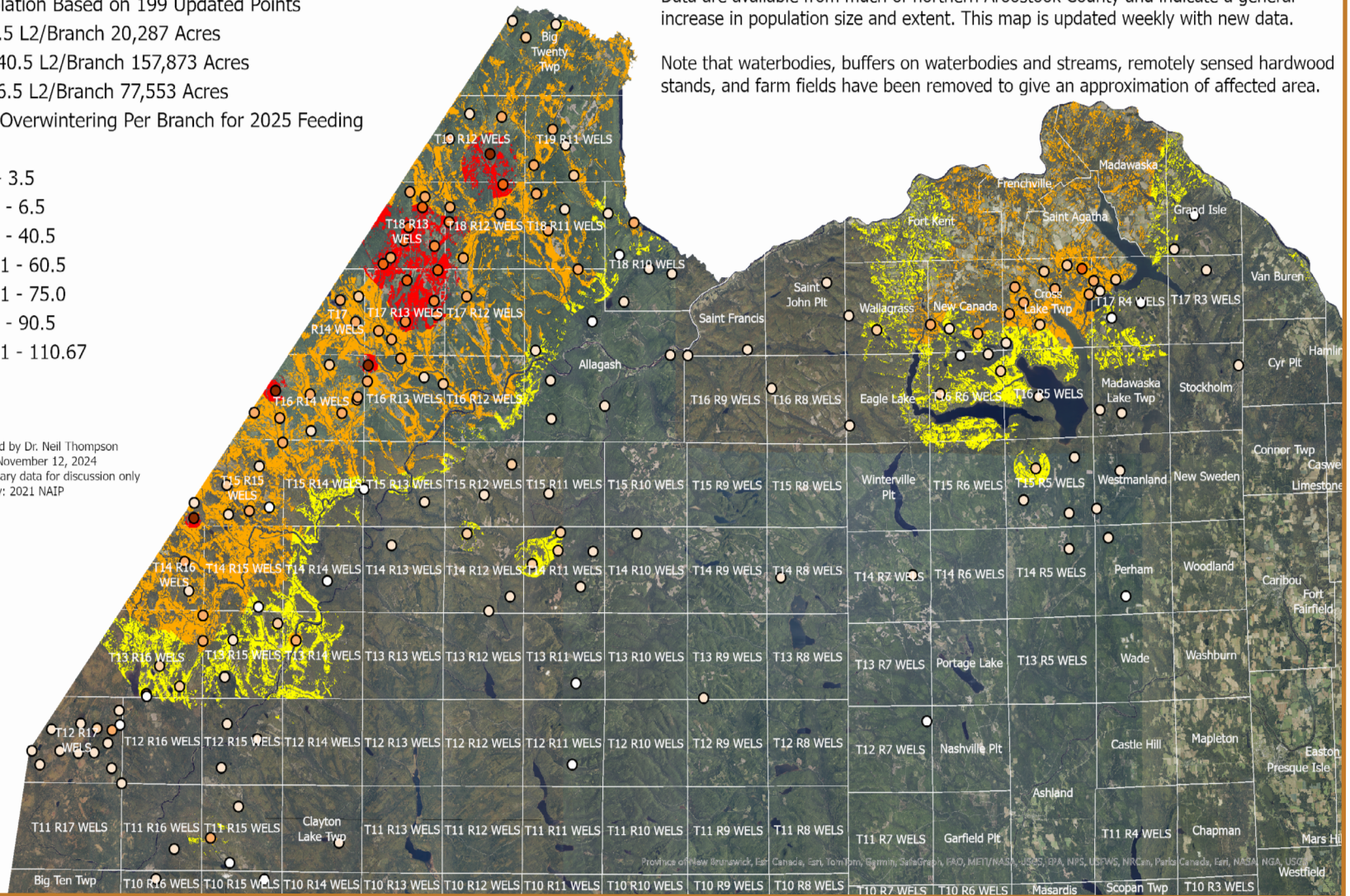


Figure 1. Spruce budworm overwintering L2 populations as of November 2024. The UMaine SBW Lab has modeled that 178,160 acres of forestland in Maine are greater than the EIS threshold of 7 L2s per branch. An additional 77,553 acres of forestland are just below the EIS threshold. **The map and projections will change as more samples are processed.**

