

# BALSAM WOOLLY ADELGID (BWA) HAZARD RATINGS

Fundy Model Forest  
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## Presence and Severity Can Be Predicted by Winter Temperatures

"The presence/absence of BWA can be predicted using plant hardiness zones, visible symptoms of damage by BWA does not usually occur in zones colder than Zone 4b"

Severity of attacks in regions where BWA is present can be predicted based on temperature.

Drs. Quiring and Ostaff found New Brunswick trees visibly damaged by BWA occurred in areas where mean January temperatures were warmer than -11C.

Temperature also explained year-to-year fluctuations in the level of damage. The incidence of branch distortion or gouting along the central axis of mid-crown branches was positively related to mean temperature during the preceding January.



Balsam woolly adelgid gall

## Management Implications

The distribution of BWA should increase westward and northward if winter temperatures increase.

To minimize damage by BWA, balsam fir should be grown in areas with the coldest overwintering temperatures (eg., higher altitudes and north-facing slopes) and in areas where tree growth rates are high.

There is not a large effect of precommercial thinning on the level of BWA damage.

No BWA damage was found on the main stems of balsam fir trees.



During two years of field surveys, branch distortion or “gout” caused by BWA feeding was evident throughout southern and eastern New Brunswick and throughout most of Nova Scotia and Newfoundland.

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## Influence of site factors and thinning on BWA damage

Research showed BWA damage was usually highest in stands where the water table was higher or lower than normal, suggesting that trees may be more stressed and grew at a slower rate. Consequently, these results suggest that increases in tree growth rate, resulting from thinning, should not make trees more susceptible to BWA. There was no general and consistent increase in BWA damage that could be attributed to thinning, although damage was slightly higher in thinned stands.

Levels of BWA damage was also influenced by elevation, crown closure, volume and height of trees of dominant species, density of dominant tree species, and basal area of dominant tree species. These trends were not consistent enough to be considered for a hazard rating.

## BWA Threat

BWA has caused extensive damage to balsam fir trees in Atlantic Canada. Affected trees are unsuitable for lumber and pulp is inferior to that of normal wood.

No insect or chemical control has been found effective in combating this pest to date.

## Funding

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Fundy Model Forest

INFOR

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## Collaborations

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