

# Quantification of the pest penetration depth of two wood boring pests in *Pinus radiata* over time at various temperatures: A guide for new phytosanitary treatments

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The larval boring depth of two wood-boring species, *Arhopalus fesus* and *Prionoplus reticularis*, was assessed to determine the penetration required by alternative quarantine treatments to effectively control phytosanitary pests. This knowledge ensures that applied treatments reach a depth that is sufficient to ensure the phytosanitary requirements of trading partners are met. Also, insect boring depth is important as it has a significant impact on the relative costs associated with administering some treatments. The rate of insect boring may vary with temperature, therefore, boring depth was examined across a range of temperatures, which are indicative of the range of average daily temperatures these pests are exposed to at forested sites around New Zealand. We destructively sampled infested logs at regular time intervals to examine the penetration profile for both species over time, under a range of temperatures. We found that both wood-boring species have significantly different boring profiles and the rate of boring was greatly affected by temperature. Furthermore, these results have sparked interest in understanding the relationship between ambient temperatures and inside wood temperatures - to explore how temperature varies at different depths within a log. We also plan to examine how differences in micro-climatic conditions affect inner log temperatures, which may directly influence the development and wood-boring potential of xylophagous larvae.

