

Assessing the dispersal ability of the bark beetle *Hylurgus ligniperda* and the wood borer *Arhopalus fesus*, two key quarantine insect pest of *Pinus radiata*

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Hylurgus ligniperda (Coleoptera: Curculionidae: Scolytinae) and *Arhopalus fesus* (Coleoptera: Cerambycidae: Aseminae) are two of the most common species associated with *Pinus radiata* logs in New Zealand. Both species utilise *P. radiata* as a dominant host, are found throughout major *Pinus* growing regions, exist in high abundance, and are attracted to recently dead or dying trees, these two species can be classified as pests of high quarantine significance for New Zealand log exports. A new approach to phytosanitary treatments for such pests of high quarantine significance has been proposed, where treatments are only applied when ecologically-based assessments of phytosanitary risk indicate there is a quarantine risk. Using estimates of local abundance, along with information on developmental biology, specific risk models can be developed to determine where and when each species is likely to be present. Quantifying the dispersal capabilities of these key individual pest species will allow modelling how far the infestation risk envelope spreads beyond a source population (spatial modelling). Quantifying immediate weather conditions (e.g. threshold temperatures) that trigger flight activity will allow to determine the seasonal occurrence (phenology) of the dispersal and reproductive stage, i.e. mature adults (temporal modelling).

