

Understanding the role of sound in insect communication - insights from bark beetles

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Abstract The golden-haired bark beetle, *Hylurgus ligniperda* (Coleoptera: Curculionidae: Scolytinae), imposes a significant threat to New Zealand pine log exports. To date, control strategies against this invasive insect have relied heavily upon fumigation treatments, particularly Methyl bromide. Most bark beetles produce acoustic signals that have been implicated in defence, courtship, aggression and species location and recognition. The use of acoustics has already been found to effectively deter some invasive bark beetle species (*Dendroctonus frontalis* and *D. brevicornis*) from entering pine logs. Although the ability to produce sounds by *H. ligniperda* has been acknowledged for decades, nothing is yet known as to the relevance of acoustics in the behaviour of this species. Thus, our main aim was to investigate the functions and characteristics of the acoustic signals produced by *H. ligniperda* and the role of sound in intraspecific communication under various ecological contexts; distress, mating, competition and territoriality. We found that the use of sound in beetle communication is context-dependent. The results of this study and the implications for future research on acoustics as a deterrent or behaviour-modifying tool for *H. ligniperda* control will be briefly discussed in this presentation.

