

# Forestry-induced disturbances and biodiversity: an examination of population structures and gene flow among saproxylic beetles

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Saproxylic beetles drive carbon and nutrient recycling in forest ecosystems but their dependence on dead wood makes them vulnerable to forestry-induced reductions in wood through harvesting and removal for fuelwood. Sustainable forest practices that maintain biodiversity need to manage coarse woody debris (CWD) so that it continues to be available for saproxylic biota. A landscape genetics approach in Tasmania's southern wet Eucalyptus obliqua forests will provide information about the scale of dispersal of several saproxylic species, one of which is listed as threatened. Analysis of the genetic variation and population structure of each species across the landscape will reveal dispersal abilities of three species within different levels of disturbance in the surrounding landscape. Dispersal ability is influenced by the physiological capabilities, life histories and mobility of the dispersing species. These are unknown for most Tasmanian beetle species including those in this research. Distances and degree of connectivity between populations further influence dispersal ability. Forestry practices modify connectivity and may increase heterogeneity in a forest landscape where mature forest is replaced with regrowth forest with a smaller diameter cwd resource. Dispersal ability will guide recommendations for long term management to generate ongoing suitable diameter CWD at a spatial scale that ensures habitat continuity and connectivity for populations of saproxylic beetles in southern Tasmanian forests. This research complements concurrent projects investigating responses of plant and bird species to disturbance in a forest landscape. The research will contribute to a broader understanding of forest ecology and landscape processes and assist forest planners.

