

A long-term experimental study of saproxylic beetle succession in Tasmanian *Eucalyptus obliqua* logs

¹Simon Grove, ¹Dick Bashford and ²Marie Yee

¹Division of Forest Research and Development, Forestry Tasmania; ²Division of Forest Management, Forestry Tasmania

Concern over the conservation implications of declining availability of large logs in Tasmania's wet eucalypt production forests led to a long-term experiment examining succession of saproxylic (dead wood-dependent) beetles in twelve study logs originating from trees deliberately felled for this study at Warra in Tasmania's southern forests. This paper documents some of the findings from the first sampling cycle; many more will be undertaken as the logs decay over coming decades or centuries.

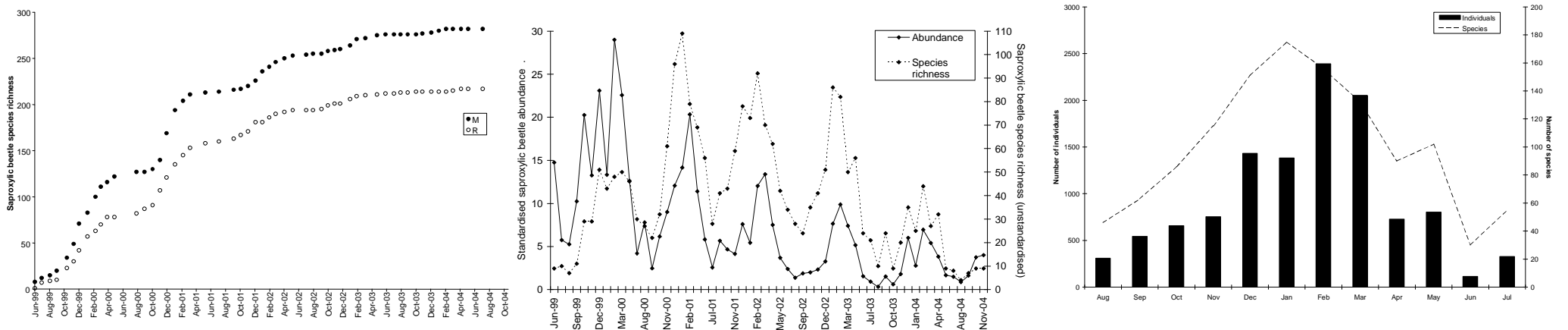


Methods
Six mature-aged ('M' - photo at right) and six regrowth-aged ('R' - photo at left) *Eucalyptus obliqua* trees growing in a multi-aged forest were felled in three tranches from May 1999 to February 2000. Five emergence traps were progressively fitted to each resultant log at roughly three-monthly intervals; each was fitted with one upper and two lower collecting heads. Traps were serviced monthly, and each was left in place for three years. For a year at the peak of the cycle, all 60 traps were in operation; the entire cycle lasted five years.



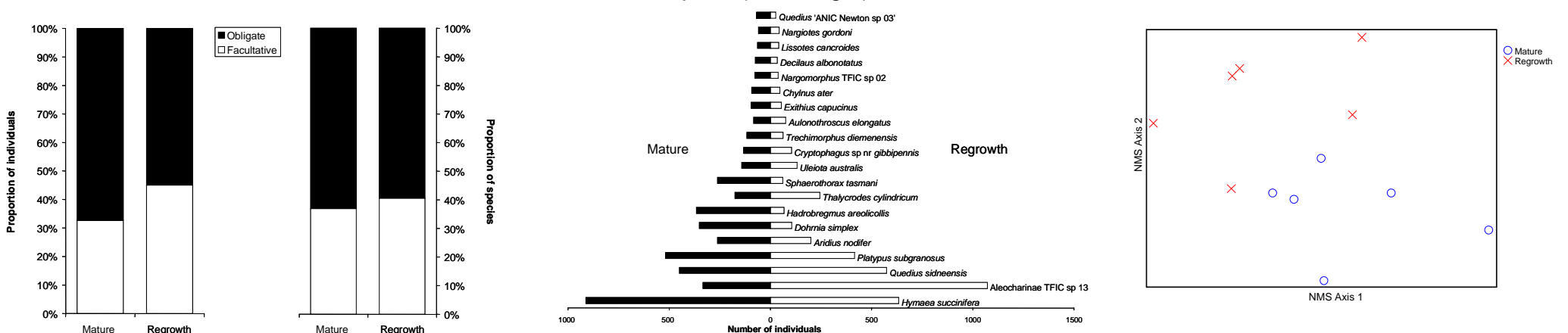
Results 1

In total, 11546 saproxylic beetles were sampled, comprising 311 species. Species accumulation curves (below left) suggest that sampling intensity was sufficient to capture most species likely to be sampleable. They also indicate that mature-aged logs harboured more species overall than regrowth logs. The twenty most abundant species made up 75% of the individuals, while 66 species were represented by singletons only. Beetle emergence was continuous throughout the cycle, but varied markedly by month and year. Total beetle abundance (adjusted for sampling effort) peaked in the first summer, while species richness peaked later in the cycle (below centre). Different species had different patterns of seasonal and between-year abundance. Overall, abundance peaked in February/March while species richness peaked in January/February (below right).



Results 2

Overall, obligately saproxylic species were more numerous than facultatively saproxylic species, more so in mature-aged logs than in regrowth logs (below left). There were only slight differences between mature-aged and regrowth logs in the overall abundances of the twenty most abundant species (below centre). Nevertheless, differences in assemblage composition were sufficiently large for the two log ages to occupy different parts of ordination space (below right).



Further information: Grove, S.J., Bashford, R.A. and Yee, M. (2008). A long-term experimental study of saproxylic beetle (Coleoptera) succession in Tasmanian *Eucalyptus obliqua* logs: findings from the first five years. Invited paper in: Fattorini, S. (Ed.), *Insect ecology and conservation*. Research Signpost, Kerala, India.

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