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Landscape and fire management interactions and their effects on distribution of invertebrate biodiversity

Ecosystem Science

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Project Team	granted
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Context

Understanding the factors controlling the distribution of invertebrates in the jarrah forest landscape is important for ecologically sustainable management. Specialised or fire-sensitive faunas that are restricted to particular geomorphic units are important for developing and implementing ecologically appropriate fire regimes and for managing fire for community protection.

Aims

- Document the effects of topography on the distribution and abundance of invertebrates in the jarrah forest.
- Determine whether landscapes provide natural fire and climatic refuges in the northern jarrah forest.

Progress

- Field work is complete and data has been verified and arranged for analysis using non-metric multidimensional scaling ordination approaches.

Management implications

Previous finding of high beta-diversity at small geographical scale (tens to a few hundred metres) within valley geomorphic units expands on the findings of other studies in the jarrah forest that show broad similarity of assemblages (low to medium beta-diversity) at medium geographical scales (up to a few tens of kilometres), and higher beta-diversity at large geographical scales. Low frequency of occurrence of most invertebrate species makes it difficult to draw conclusions about the refugial nature of southern aspects, though for some species aspect is an apparently important determinant of local distribution. Greater trapping effort over a longer duration would be required to confirm this hypothesis. Disturbance at any geographical scale within the valleys of the jarrah forest is likely to have a greater effect on invertebrate species composition than disturbance at such a scale in upland jarrah forest.

Future directions

- Complete data analysis and prepare a manuscript for publication.