Connectivity and restoration in *Acacia woodmaniorum* (Maslin and Buscomb), a rare endemic of the Yilgarn Banded Ironstones

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Symposium: Seed Sourcing Guidelines for Restoration Success

Restoration ecology science is increasingly recognising the importance of contemporary evolutionary processes that maintain genetic connectivity for achieving successful long term restoration outcomes. The negative genetic impacts of reduced connectivity and mate limitation are well recognised and have been shown to be especially relevant to species that exhibit a degree of self incompatibility. In order to inform post-mining restoration practices we assessed historical and contemporary levels of genetic connectivity, as well as aspects of the contemporary mating system for Acacia woodmaniorum, an EPBC listed species of the Western Australian Banded Iron Formations. While fine scale genetic structure is observed, estimates suggest historical gene flow has been more than sufficient to maintain adaptive connectivity across the species range and largely negate any impacts of increased inbreeding in small, disjunct populations. A highly outcrossed contemporary mating system suggests a genetic self incompatibility mechanism. Immigration of outcrossed pollen combats mate limitation and results in large effective population sizes even in small, disjunct populations, but suggests a high dependence on dispersal of outcrossed pollen for reproductive success. Alteration to pollinator numbers, assemblages or behaviour that negatively affects the introduction of outcrossed pollen is likely to have significant affect on production of viable seed and reproductive success. The pattern of genetic structure also suggests an influence of wind on insect mediated pollen dispersal. Establishment of restored populations with high levels of diversity may alleviate any affect of mate limitation and placement of restored populations in the landscape will be critical for this taxon.

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