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### Factors affecting orchid invasion of the post-mining landscape

This study evaluated the effect of the recovery of both vegetation structure and diversity, and orchid mycorrhizal fungi on the invasion of the post bauxite-mining landscape by indigenous terrestrial orchids of South West Western Australia. Orchids have been shown to invade mine-site rehabilitation areas quickly but generally species diversity and population sizes are very different to that of un-mined forest. Rehabilitation area vegetation structure was found to have returned to a jarrah forest-like state within 27 years of establishment with the main difference being the lack of cover from herbaceous species. However, species diversity was still very different to un-mined forest. Baiting for orchid mycorrhiza with buried seed packets found that these fungi had re-established in the minesite rehabilitation areas but at lower frequencies than observed in other Western Australian studies on different soil types. Two orchid species were examined in more depth, *Caladenia flava* and *Thelymitra crinita*. The detection of mycorrhizal fungi of the orchid species *Caladenia flava* was correlated with vegetation and litter cover characteristics associated with increasing rehabilitation area age. While the detection of the mycorrhizal fungi of *Thelymitra crinita*, an orchid which did not reoccur in the post-mining rehabilitation areas, was correlated only with vegetation and litter cover characteristics of un-mined forest. Mycorrhizal fungi of *Pyrorchis nigricans*, an orchid species that had failed to invade the rehabilitation areas were detected in older rehabilitation areas and suggestions are made regarding reasons for the failure of these species to invade.