Presented Paper:

Microclimate and soil properties of older bilby diggings at Lorna Glen rangelands restoration project.

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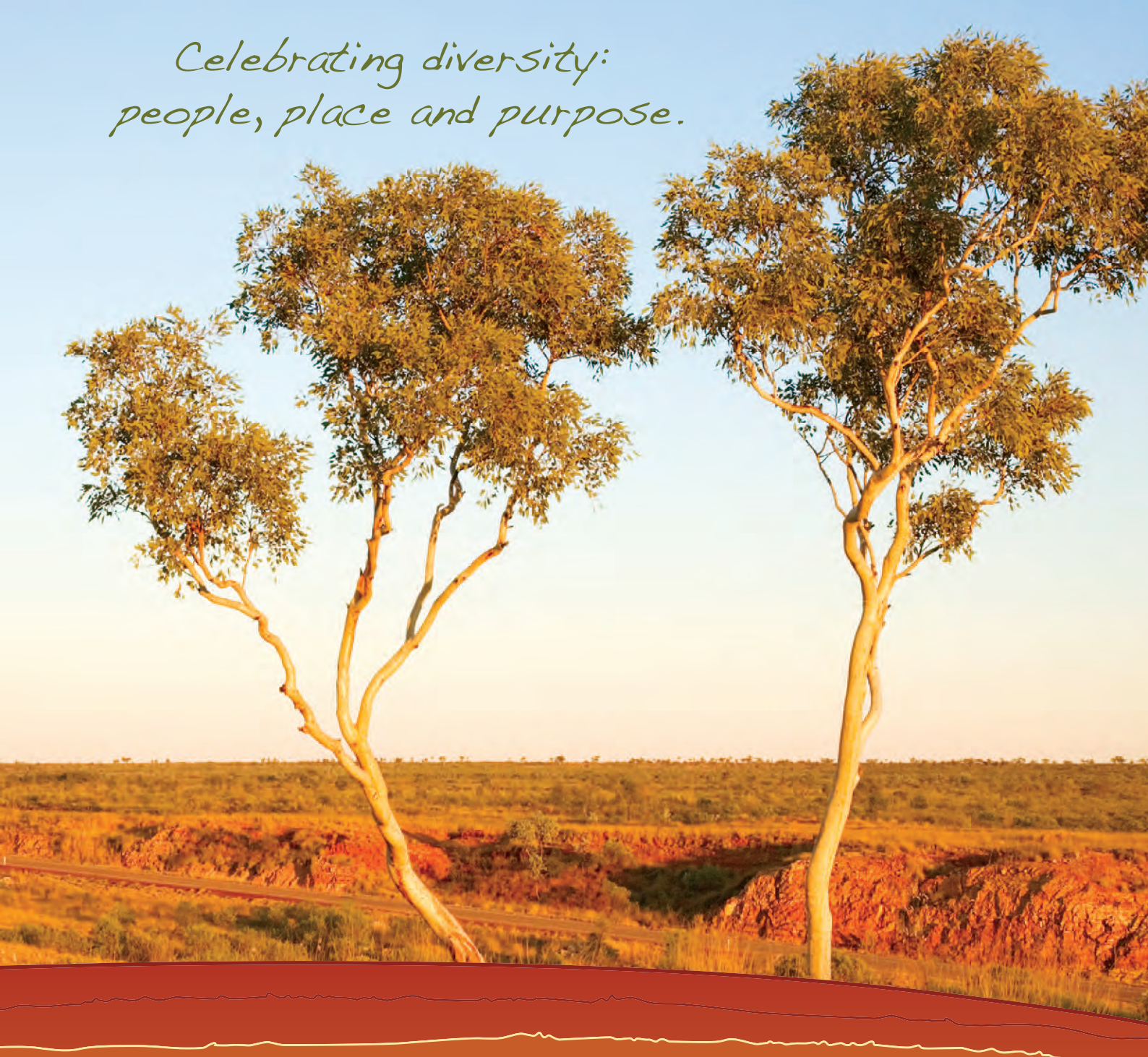
Abstract:
This study investigated the microclimate and soil properties of three year old bilby (*Macrotis lagotis*) diggings at ex-pastoral Lorna Glen Station (Mutawa), in central Western Australia. Microclimate conditions were milder and less variable in diggings than on undisturbed soil, particularly at night. Relative humidity was also more stable in large volume diggings than small volume diggings at night. Soils from the bottom of the diggings were significantly higher in ammonium and nitrate, exchangeable potassium and magnesium and total cation exchange capacity than undisturbed soil. Greater soil fertility in diggings may be explained by a number of processes operating alone or in combination. First, removal of the nutrient deficient surface soil by bilbies exposes the more fertile sub-soil. Second, given that the diggings were around three years old, accumulation and mixing of litter and soil, including that transported from the de-compacted spoil mounds, may have increased soil fertility. Third, the milder and less variable microclimate conditions in diggings may facilitate nutrient mineralisation via litter breakdown and the activity of soil fauna and fungi. Finally, exchangeable nutrients may be released in pulses during periodic alternate wetting and drying of the soil; a climatic pattern typical at Lorna Glen. This study has shown that bilbies increase heterogeneity of soil microclimate, fertility and compaction. The milder microclimate and greater soil fertility in diggings may potentially benefit plant germination and productivity and fauna seeking to use diggings as refuges and habitats.



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