

The potential of groundwater recharge plantations in the Lake Warden catchment, Esperance, to encourage diversity of invertebrates and birds

ALCOA FOUNDATION'S CONSERVATION AND SUSTAINABILITY FELLOWSHIP PROGRAM



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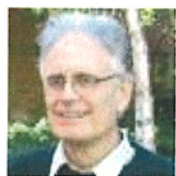
A NETWORK OF PLANTATIONS IS BEING TRIALED IN THE LAKE WARDEN CATCHMENT SURROUNDING ESPERANCE, IN ORDER TO LOWER GROUNDWATER TABLES AND REDUCE SALINITY AND LAKE INFLOW PROBLEMS. THESE PLANTATIONS ALSO HAVE THE POTENTIAL TO RESTORE BIODIVERSITY IN AN AREA WHERE 80% OF THE NATIVE VEGETATION HAS BEEN REMOVED. THIS STUDY INVESTIGATED THE BIODIVERSITY VALUE OF *PINUS PINASTER*, *EUCALYPTUS CLADOCALYX* AND *E. TRICARPA* PLANTATIONS BY SAMPLING THE INVERTEBRATES ON AND BENEATH TREES, AND ALSO THE BIRDS THAT INHABIT THESE AREAS. NATIVE MALLEE AND NON-REVEGETATED PASTURE PLOTS WERE ALSO SAMPLED TO PROVIDE BEFORE/AFTER BENCHMARKS. ALL THREE TYPES OF PLANTATION ENHANCED THE ABUNDANCE AND DIVERSITY OF CERTAIN GROUPS OF INVERTEBRATES, WITH EUCALYPTS SHOWING GREATER EFFECTS THAN PINES. *E. TRICARPA* APPEARED TO HAVE MORE VALUE THAN *E. CLADOCALYX* IN THIS REGARD. THE BIRD ASSEMBLAGES THAT UTILISE THESE AREAS, MANY OF WHICH FEED ON INVERTEBRATES, MIRRORED THESE RESPONSES, ALTHOUGH THEY HAD STILL NOT ATTAINED THE RICHNESS OF THE NATIVE VEGETATED AREAS. IT IS CONCLUDED THAT ALL TYPES OF PLANTATION ENHANCE INVERTEBRATE AND BIRD BIODIVERSITY, ALTHOUGH EUCALYPTS ARE MORE EFFECTIVE THAN PINES AT DOING THIS.



Maria Eunice Paula de Souza is a graduate in agronomic engineering from the Universidade Federal de Viçosa in Brazil. She is visiting Curtin under a student-exchange agreement and intends to commence an MSc on eucalypt plantation pests when she returns to Brazil.



Maria (Mazé) de Sousa-Majer has a broad entomological background, having worked on bee diseases, microbial insect control, genetically-modified crops and post-harvest disinfestation of native crops. She holds undergraduate and MSc degrees from the Universidade Federal de Viçosa in Brazil and a doctorate from Curtin University of Technology, which was capped off by a postdoctoral fellowship at the same institution.



Jonathan Majer is an insect ecologist, with more than 30 years of research experience in Western Australian ecosystems. Since insects are exceptionally diverse, and are found in almost every situation, Jonathan Majer's research has involved him in a wide range of issues, including the ecological impacts of urbanisation, impacts of prescribed burning of forests and nature reserves, impacts of habitat fragmentation, and restoration of ecosystems following mining or agriculture. He is also developing ways to use insects as bio-indicators of environmental health.



Francene O'Connor is the Farm Forestry Natural Resource Officer for the Esperance-based Private Forestry Development Committee (PFDC) South East Forest Foundation. Since completing a Bachelor of Forest Science at Melbourne University in 2000, Francene has had a variety of experience across both native and plantation forestry. She envisages a future where all agricultural farming systems integrate commercial tree planting, recognising it as a valuable tool towards achieving more sustainable land management practices and to support the development of local industry.

