

Selected publications

(*Alcoa authors underlined*)

Mine restoration

Bell, D.T., Plummer, J.A. and Taylor, S.K. (1993). Seed germination ecology in Southwestern Western Australia. *Botanical Review* **59**: 24-73.

Daws, M.I., Downes, K.S., Koch J.M. and Willyams, D. (2014). Is broad-scale smoke–water application always a useful tool for improving seedling emergence in post-mining restoration? Evidence from jarrah forest restoration in Western Australia. *South African Journal of Botany* **90**, 109-113.

Daws, M.I., Standish, R.J., Koch, J.M., Morald, T.K., Tibbett, M. and Hobbs, R.J. (2015). Phosphorus fertilisation and large legume species affect jarrah forest restoration after bauxite mining. *Forest Ecology and Management* **354**, 10-17.

Koch, J.M. (2007). Restoring a jarrah forest understorey vegetation after bauxite mining in Western Australia. *Restoration Ecology Supplement* **15**: S26-S39.

Krauss, S.L. and Koch, J.M. (2004). Rapid genetic delineation of provenance for plant community restoration. *Journal of Applied Ecology* **41**, 1162-1173.

Tacey, W.H. and Glossop, B.L. (1980). Assessment of topsoil handling techniques for rehabilitation of sites mined for bauxite within the jarrah forest of Western Australia. *Journal of Applied Ecology* **17**: 195-201.

Willyams, D. (2015). Challenges in domesticating and propagating Jarrah forest geophytes for revegetation and ornamental horticulture. *Acta Horticulturae* **1104**, 229-236.

Ecosystem development and management

Banning, N.C., Gleeson, D.B., Grigg, A.H., Grant, C.D., Andersen, G.L., Brodie, E.L. and Murphy, D.V. (2011). Soil microbial community successional patterns during forest ecosystem restoration. *Applied and Environmental Microbiology* **77**: 6158-6164.

Gardner, J.H. and Malajczuk, N. (1988). Recolonisation of rehabilitated bauxite mine sites in Western Australia by mycorrhizal fungi. *Forest Ecology and Management* **24**: 27-42.

Grant, C.D. (2006). State-and-Transition successional model for bauxite mining rehabilitation in the jarrah forest of Western Australia. *Restoration Ecology* **14**: 28-37.

Smith, M.A., Grant, C.D., Loneragan, W.A., and Koch, J.M. (2004). Fire management implications of fuel loads and vegetation structure in jarrah forest restoration on bauxite mine sites in Western Australia. *Forest Ecology and Management* **187**: 247-266.

Standish, R.J., Daws, M.I., Gove, A.D., Didham, R.K., Grigg, A.H., Koch, J.M. and Hobbs, R.J. (2015). Longterm data suggest jarrah-forest establishment at restored mine sites is resistant to climate variability. *Journal of Ecology* **103**, 78–89.

Ward, S.C. (2000). Soil development on rehabilitated bauxite mines in south-west Australia. *Australian Journal of Soil Research* **38**: 453-64.

Fauna restoration

Craig, M.D., Hardy, G.E.St.J., Fontaine, J.B., Garkakalis, M.J., Grigg, A.H., Grant, C.D., Fleming, P.A. and Hobbs, R.J. (2012). Identifying unidirectional and dynamic habitat filters to faunal recolonisation in restored mine-pits. *Journal of Applied Ecology* **49**: 919–928.

Craig, M.D., Stokes, V.L., Fontaine, J.B., Hardy, G.E., Grigg, A.H. and Hobbs, R.J. (2015). Do state-and transition models derived from vegetation succession also represent avian succession in restored minepits? *Ecological Applications* **25**, 1790-1806.

Majer, J.D., Brennan, K.E.C. and Moir., M.L (2007). Invertebrates and the restoration of a forest ecosystem: thirty years of research following bauxite mining in Western Australia. *Restoration Ecology Supplement* **15**: S104-S115.

Nichols, O.G., and Grant, C.D. (2007). Vertebrate fauna recolonisation of restored bauxite mines – key findings from almost 30 years of monitoring and research. *Restoration Ecology Supplement*. **15**: S116-S126.

Triska, M.D., Craig, M.D., Stokes, V.L., Pech, R.P. and Hobbs, R.J. (2016). The relative influence of in situ and neighborhood factors on reptile recolonization in post-mining restoration sites. *Restoration Ecology* **24**, 517-527.



Western Pygmy Possum

Phytophthora Dieback

Colquhoun, I.J. and Hardy, G.E.St.J. (2000). Managing the risks of *Phytophthora* root and collar rot during bauxite mining in the Eucalyptus marginata (jarrah) forest of Western Australia. *Plant Disease*, **84**: 116-127

Colquhoun, I. J. and Kerp, N. L. (2007). Minimising the spread of a soil-borne plant pathogen during a largescale mining operation. *Restoration Ecology Supplement*. **15**: S85-S93.

Kunadiya, M., Dunstan, W., White, D., Hardy, G., Grigg, A. and Burgess, T. (2019). A qPCR assay for the detection of *Phytophthora cinnamomi* including an mRNA protocol designed to establish propagule viability in environmental samples. *Plant Disease* doi.org/10.1094/PDIS-09-18-1641-RE

Jarrah forest hydrology

Grigg, A.H. (2017). Hydrological response to bauxite mining and rehabilitation in the jarrah forest in south west Australia. *Journal of Hydrology: Regional Studies* **12**, 150-164.

Grigg, A.H. and Hughes, J. (2018). Non-stationarity driven by multi-decadal change in catchment groundwater storage: a test of modifications to a common rainfall-runoff model. *Hydrological Processes*, DOI: 10.1002/hyp.13282.

Hughes, J.D., Petrone, K.C. and Silberstein, R. (2012). Drought, groundwater storage and stream flow decline in south-western Australia. *Geophysical Research Letters* **39**, L03408.

Macfarlane, C., Grigg, A., McGregor, R., Ogden, G. and Silberstein, R. (2018). Overstorey evapotranspiration in a seasonally dry Mediterranean eucalypt forest: response to groundwater and mining. *Ecohydrology* DOI:10.1002/eco.1971

Refinery residue rehabilitation

Banning, N.C., Sawada, Y., Phillips, I.R. and Murphy, D.V. (2014). Amendment of bauxite residue sand can alleviate constraints to plant establishment and nutrient cycling capacity in a water-limited environment. *Ecological Engineering* **62**: 179-187.

Goloran, J.B., Phillips, I.R., Xu, Z.H., Condon, L.M. and Chen, C.R. (2014). Effects of amendments and fertilization on plant growth, nitrogen and phosphorus availability in rehabilitated highly alkaline bauxite-processing residue sand. *Soil Use and Management* **30**: 198-208.

Jones, B.E.H., Haynes, R.J. and Phillips, I.R. (2010). Effect of amendment of bauxite processing sand with organic materials on its chemical, physical and microbial properties. *Journal of Environmental Management* **91**: 2281-2288.

Phillips, I.R. and Chen, C. (2010). Surface charge characteristics and sorption properties of bauxite-processing residue sand. *Australian Journal of Soil Research* **48**: 77-87.



Environmental Research Program

A comprehensive research program provides the scientific data and knowledge to inform leading practice environmental management at our operations.

Science and technology underpin our rehabilitation processes which have seen continuous improvement over many years.

We have pioneered new techniques to eradicate *Phytophthora* dieback, while our mine site fauna research has made a significant contribution to global leading practice.

Alcoa's Environmental Department conducts and coordinates the research program, collaborating with universities across Australia, and with government research bodies such as the Department of Biodiversity, Conservation and Attractions and the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

Together, we're contributing to the global understanding of effective conservation and environmental management strategies for mine site restoration, and a more sustainable future for our industry.

Since 1975, Alcoa has supported the publication of more than 250 refereed journal papers and book chapters, 80 technical studies, and about 60 higher-degree research theses.

We recognise the long-term value of environmental research and we encourage publication of work and sharing of key findings as part of our commitment to raising industry standards.