

New PhD project @ Archaeology and Natural History, ANU 2007-2009

Impact of European Settlement on the Tropical Rainforest of northeast Queensland



Description of the ecological changes during the period of European settlement of Australia has generally fallen to those deriving their primary data from historical documents or “long-term” ecological data (Kirkpatrick 1999; Bowman et al. 2001). These studies show that Australian ecosystems are highly dynamic and have undergone significant change through most of the last century due to land-use and climate change. However, there is a rapid loss of quality and quantity of primary data with increasing antiquity and, with this, a diminishing capacity to understand the rate, magnitude and root causes of ecological change during the early stages of settlement. The need to understand these deeper temporal dynamics of ecosystem change, which can occur at decadal to millennial scales, is crucial if realistic models of ecosystem response to future change are to be developed (Whittaker et al. 2005, Haberle et al. 2006).

This project will target three maar deposits on the Atherton Tablelands (lake Euramoo, Bromfield Swamp and Quincan Crater) that lie along transect of variable impacts from European settlement clearance activities over the last 130 years. Sediment cores are being extracted from these sites and will provide the opportunity to reconstruct environmental change using a range of biotic (pollen, charcoal, diatoms, plant and invertebrate macro-fossil remains) and non-biotic (particle size, humification, stable isotopes) proxies. The nature of human-rainforest interaction prior to European settlement will also be of interest.

Resources and associations: This is a well-resourced project conducted on established sites with an extensive palaeoecological research history. You will join a vibrant palaeoecological and archaeological group at ANU where you will have access to state-of-the-art laboratory facilities. You will be enrolled in the Archaeology and Palaeoanthropology Graduate Program and be based in the Department of Archaeology and Natural History, RSPAS.

Background of candidates:

We are seeking highly motivated and enthusiastic students with a background in biology, geography, archaeology, environmental science, or similar. Some field experience would be an advantage. A first class honours or research masters in a relevant field is required.

Applications and closing dates for international (IPRS) and local (APA) scholarships:

Interested applicants should submit an application for a graduate scholarship to ANU. *The deadline for receipt of IPRS applications from international students is 31st August 2006; for APA/ANU/GSS scholarships for Australian and New Zealand students the deadline is 31st October 2006.* RSPAS also has funding available for tuition and full scholarships for outstanding students. The successful candidate will be expected to commence between 2nd Jan and 31st Mar 2006. Application forms for both international (IPRS) and local (APA) scholarships are available at <http://www.anu.edu.au/sas/forms/>

For further information about this project contact:

Dr Simon Haberle, Department of Archaeology and Natural History, Research School of Pacific and Asian Studies ANU, Canberra 0200 Email: simon.haberle@anu.edu.au, tel: +61 2 6125 3373 Homepage: http://rspas.anu.edu.au/people/personal/habes_rmap.html

Dr Nick Porch, Department of Archaeology and Natural History, Research School of Pacific and Asian Studies, ANU, Canberra 0200. Email: nicholas.porch@anu.edu.au, tel: +61 2 6125 5975

Relevant web links:

PalaeoWorks <http://palaeoworks.anu.edu.au/>

Department of Archaeology and Natural History <http://rspas.anu.edu.au/anh/>

Australian National University Graduate School <http://www.anu.edu.au/graduate/scholarships/>

Bowman, D.M.J.S., Walsh, A. & Milne, D.J. (2001) Forest expansion and grassland contraction within a Eucalyptus savanna matrix between 1941-1994 at Litchfield National Park in the Australian monsoon tropics. *Global Ecology & Biogeography*, 10, 535-548.

Haberle, S.G., Tibby, J., Dimitriadis, S., and Heijnis, H. (2006) The impact of European occupation on terrestrial and aquatic ecosystem dynamics in an Australian tropical rain forest. *Journal of Ecology* 94, 987-1002.

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Whittaker, R.J., Araújo, M.B., Jepson, P., Ladle, R.J., Watson, J.E.M. & Willis, K.J. (2005) Conservation Biogeography: assessment and prospect. *Diversity and Distributions*, 11, 3-23.