

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

Biodiversity Change through Time in the Tropical Rainforest of Papua New Guinea



The potential for sudden collapse of ecosystems in response to multiple interacting pressures has been of increasing concern in ecological and conservation research (Scheffer *et al.* 2001, *Nature* 413:591). In the rainforests of Papua New Guinea, human populations numbers are growing rapidly and there is increasing pressure from a range of human resource exploitation from ancient forest clearance for agriculture to recent deforestation for commercial logging and mining. As part of the third largest expanse of rainforest on the globe these rainforests support a staggering array of plant and animal diversity. An equally staggering concentration of cultural and linguistic diversity can be found amongst human populations interacting and subsisting within these environments. One of the lessons learnt from the incorporation of ecological histories into models to understand and manage forest environments is that, with an adequate historical perspective, ecological catastrophes such as biodiversity loss can be predicted and averted (Swetnam *et al.* 1999, *Ecological Applications* 9:1189).

This research project aims to chart long-term changes in biodiversity in the Crater Mountain Wildlife Management Area (CMWMA) of southern Papua New Guinea, a region typifying the cultural and natural variability across the island. Human resource exploitation and natural environmental change (including climate change and volcanic activity) have all played a part in shaping the rainforests of today, however, we still know little of the rate or scale of change that has occurred in the past. The successful candidate will use palaeoecological techniques in lake sites that span the period from the last glacial maximum to the present to explore:

1. the role of multiple interacting pressures, including climate change, volcanic eruptions and human activity on rainforest ecosystem change/stability through time.
2. the development of measures of biodiversity from palaeoecological data,
3. approaches to incorporating palaeoecological data into environmental management models and the implications for conservation and management in the Crater Mountain Wildlife Management Area (CMWMA), Papua New Guinea.

Resources and associations: You will join a vibrant palaeoecological and archaeological group at ANU where you will be based in the Department of Archaeology and Natural History, Research School of Pacific and Asian Studies. This is a well-resourced project conducted in conjunction with current departmental research activity in Papua New Guinea. The successful candidate will be expected to conduct fieldwork in the CMWMA of Papua New Guinea in 2007 and 2008. The CMWMA was established in 1994 with support from the Wildlife Conservation Society (WCS) as a cooperative venture between The Research and Conservation Foundation of PNG, local landowners and government.

Background of candidates:

We are seeking highly motivated and enthusiastic students with a background in Quaternary science, geography, botany, 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:

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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/>

Research and Conservation Foundation of PNG <http://www.rcf.org.pg/home.html>

Wildlife Conservation Society, Papua New Guinea <http://www.wcs.org/international/Asia/>