

# Archaeology and Natural History

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## Rock Art Surveys with Noel Hidalgo Tan

In the last three months, I have been working at rock art sites in Cambodia, Thailand and Laos; surveying sites in Cambodia for a larger full-scale recording exercise at the end of the year, and recording sites in Thailand and Laos as points of comparison. The landscapes are all similar - sandstone escarpments set on the edges and bases of mountains and the human usage of these places are similar too - at almost every site there is some indication of religious use in the vicinity.

In Cambodia, I was able to visit some of the rock art sites that were discovered by my Cambodian colleagues last year, particularly a site called Poeng Komnou which is more famous for its green, 12th century carvings of Hindu deities. Many of the sites in this area of Cambodia, around the base of Mount Kulen, contain rock art that appears to have been made over a long period of time. One unexpected result from my field trip to Cambodia was the discovery of undetected paintings in the walls of the famous Angkor Wat temple, which I recovered using rock art digital enhancement techniques. It was an exciting side discovery because the images that came up were quite spectacular, and none of my local colleagues were aware of their existence even as thousands of people visit the site every day!

My next field excursions brought me just north of Cambodia to Northeast Thailand which was once



Field team at Kaho Chan Ngam, Thailand.

under Khmer dominion. We eased ourselves into a relatively simple site called Khao Chan Ngam (The Mountain of the Beautiful Moon), a rock shelter that is used by forest monks today as a hermitage. This site was interesting because one of the shrines contained the preserved body of a baby, now almost 30 years old.

The second region of study was at the Phu Phra Bat Historical Park, located in Udon Thani Province near the border to Laos. The name of the park refers to the Footprints of the Buddha, large feet-shaped depressions in the sandstone that become venerated as the very footprints of Buddha. In the midst of this sacred landscape, over a hundred rock art sites have been found and we picked several for closer recording.

Our last stop of the journey was in Laos, in the World Heritage Site of Luang Prabang. The Pak Ou Caves,

located two hours up the Mekong River, contains a large number of Buddhist statues since the 16th century and is considered the birth-place of Buddhism in Laos. We had hoped to investigate some rock art found in the walls of one of the caves, but unfortunately, permissions did not come in on time. The option to record the site in detail is still open, and I may do so sometime in the future.

In the coming months I'm hoping to get some groundwork done in Cambodia and record one more site in Myanmar before returning to Canberra in October. .

## In Other News

**Sue O'Connor's** research on Pleistocene fishing in East Timor features as the lead story in the May issue of *Australasian Science*

“... two major layers of human settlement occurred in Southern China during the Holocene .”

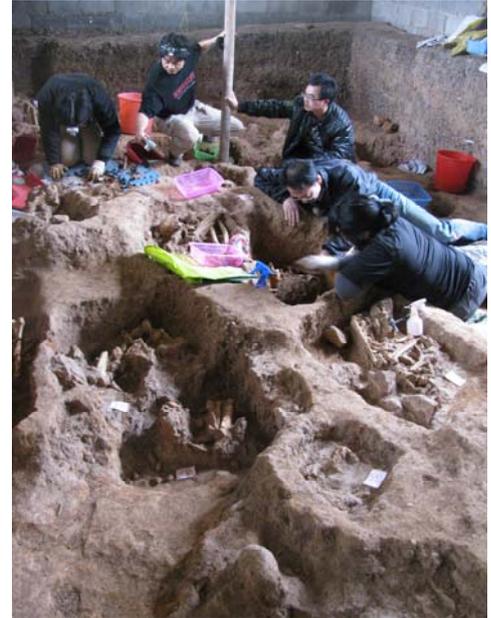
## Finding the Later Hunter-Gatherers in Southern China

In March 2012, **Hsiao-chun Hung** and colleagues launched the first part of a six-year international research program for studying the transition from foraging to farming in southern China. The investigation began in Guangxi Province of Southern China. The team members came from Japan (Hirofumi Matsumura of Sapporo Medical University, Mariko Yamagata of Waseda University, Yousuke Kaifu of National Museum of Natural and Science, and two PhD students from Waseda University), Vietnam (Nguyen Lan Cuong, Deputy General Secretary of Vietnam Archaeology Association), and China (Li Zhen and several other archaeologists of Archaeology Institute of Guangxi).

The inaugural component of the Guangxi research involved excavation at the late hunter-gatherer site of Huiyaotian in Nanning. This shell midden site typifies the late phase of Dingsishan culture, dated 7000-3000 BC. Many of the findings are similar to those at Da But sites in northern Viet-

nam. Both are regarded as later hunter-gatherers settlements, during a time when the earliest farming communities were emerging in the middle and lower Yangtze region.

Besides working at Huiyaotian, Hung and Matsumura examined the human skeletal remains from Hemudu, Majiabang (Zhejiang Province), and Jiahua (Henan Province). These assemblages represent the early farmers in China, 7000-5000 BC. According to our study of cranial affinity, two major layers of human settlement likely occurred in Southern China during the Holocene. The earlier Holocene layer included non-farming



International collaborative excavation at Huiyaotian, Guangxi, China.

Australo-Melanesians, and the later arrival included Mongoloid populations who were early farmers in this region.

**Hsiao-chun** is excited about the good start to their six-year program!

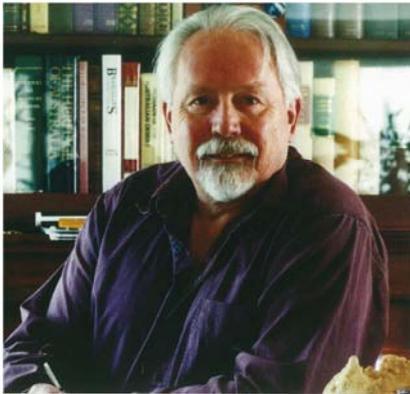
## Major Equipment Grant to ANH

ANH was awarded a \$60,000 grant by the ANU Sub-Committee on Major Equipment Expenditure for the purchase of an Archaeology and Palaeoenvironmental Stable Isotope Sample Preparation Facility. With an additional \$5,000 each pledged by the College of Asia and the Pacific, the School of Culture, History and Language, and ANH, the total cash grant is \$75,000 plus in-kind labour and supplies from SCHL. Led by **Jack**

**Fenner** and **Janelle Stevenson**, the project includes the purchase and installation of a laboratory-grade freeze dryer, microgram balance, a 40X microscope lens, and related equipment within current ANH quarantine-approved laboratories. The Facility will allow ANH staff and students to pre-process archaeological organics and environmental sediment cores for stable isotope ratio analysis, and thus to expand the scope of archaeo-

logical and palaeoenvironmental isotope analyses in two dimensions: a greater range of materials and order of magnitude increase in the number of analyses. We expect to broaden our isotope analysis source materials to include bone collagen (by far the most important archaeological stable isotope material), bulk organics from sediment, and possibly diatom silicates. It is anticipated that the Facility will be ready for use by late July.

## In Memoriam - Alan Thorne



We are sad to record the death of **Alan Thorne**.

Starting as a member of the Department of Pre-history, Research School of Pacific Studies, **Alan** made an enormous contribution to Australian archaeology, in research on Pleistocene and later Aboriginal skeletal remains and on the regional development of early humans.

Below is the text of the eulogy Matthew Spriggs read at **Alan's** funeral on 28 May 2012.

In thinking on **Alan's** intellectual career, three words sprang to mind: determination, perseverance and wit. **Alan** was certainly someone who got tougher as the situation worsened. Promulgating an important but much-attacked theory on the evolution of modern humans – us –, when criticism of his ideas mounted, Alan simply became more determined to pursue his cause.

He and his American colleague Milford Wolpoff in a seminal journal article in 1981 provided a model of human origins that could be tested, and it became one of the most contested issues in palaeoanthropology for several decades. It continues to be tested and debated today, 30 years on. Few theories last that long in our field.

Earlier in **Alan's** career his contribution was in putting the Pleistocene skeletal record of Australia in a world context, creating interest beyond academia among Indigenous Australians proud to have been the first modern sailors, probably on rafts, as they journeyed to reach their Australian home.

He was also one of the first Western scientists to be invited to conduct research in the People's Republic of China, and this resulted in a long period of productive collaboration – particularly with Professor Wu Xinzhi. This collaboration and the sensitive way Alan approached it, helped open up the Chinese Academy of Sciences to Western scholars more broadly; this was to the benefit of other Australian scientists such as Professor Peter Brown of UNE, one of **Alan's** PhD students.

In an email to me, Peter noted his appreciation of the opportunities, support and stimulation that Alan provided for a young scholar. These thoughts were echoed by Professor Peter Hiscock of the ANU, who told how helpful Alan was to him as a young student, editing one of Peter's papers to make it readable. In fact Alan didn't even ask him if he could do it. He just did it because it needed to be done.

As scientists, we should aspire to be proved wrong because, as some sage once said, science advances through error. In the end all of our grand ideas will be proved wrong. If we aspire to be at least half-right we are usually aiming too high. But as well as scientists we are also human. We have a tendency to hold on to our grand ideas too long, because they are our grand ideas and we cherish them. Many thought **Alan** was one of those fallible human scientists who held on to his grand idea too long: in

this case the Multiregional theory of human evolution, opposed to the now more popular counter-theory of Out-of-Africa.

The development of modern genetic techniques seemed to favour Out-of-Africa through the 1990s, and Alan and his colleagues looked to be a dwindling and lonely band. Was he someone who just hung on to his pet theory too long, as many believed?

Well, no. **Alan** showed two of his major intellectual traits here: determination and perseverance. He could not explain to himself how, if we are all essentially modern Africans, anatomical features found in each region of the world in earlier pre-modern hominids could be seen to continue on in the modern humans of those regions. He worried this question like a dog with a bone for years. And, in the last few years, evidence from advances in recovering ancient DNA from skeletons has suggested that there was some admixture between the earlier hominids of Europe, the Neanderthals, and incoming modern humans from Africa, contributing to the genetic make-up of modern Europeans. Just last year the discovery and analysis of the ancient DNA of the Denisovans in Asia showed that some of their genes have passed on to modern New Guineans and indigenous Australians.



**Alan (centre) at Kow Swamp, with hydrologist Phil Macumber (left) and field assistant Rob Thorne (right) (no relation to Alan), early 1970s.**

So the 'pure' version of Out-of-Africa turns out to have

been not all right, and **Alan** and Milford Wolpoff's Multiregional view of evolution appears 30 years on to be not all wrong; and half-right 30 years on is very good indeed.

When I was a PhD student at the ANU in the late 1970s and found some skeletal remains in Vanuatu I, of course, took them to **Alan** for inspection and opinion. His report was succinct, ending with something along the lines: "The skeleton is clearly male; if female, I would hate to meet her mother". There is always a place for ready wit in science, and **Alan** had that too in spades.

*Thanks to Peter Brown and Peter Hiscock for email discussion which contributed greatly to the thoughts expressed here, and to Colin Pardoe for last-minute proof-reading of my manuscript text during the funeral service itself.*

Matthew Spriggs

## Recent Publications

**Ambrose, W.** and S. Novak. 2012. Obsidian hydration chronometrics using SIMS and optical methods from 26-year temperature controlled exposures. In I. Liritzis and C. Stevenson (eds.) *Obsidian and Ancient Manufactured Glasses*. Albuquerque: University of New Mexico Press. Pp. 15-25.

Bowler, JM, **R. Gillespie**, K. Bolkjovac, and H. Johnson. 2012. Wind v Water: Glacial Maximum records from the Willandra Lakes. In S.G. Haberle & B. David (eds.) *Peopled Land-*

*scapes: Archaeological and Biogeographic Approaches to Landscapes*. *Terra Australis* 34. Canberra: ANU E-Press. Pp. 271-296.

**Cameron, J.** 2012. The Spinning Tools. In C.F.W. Higham & A. Kingam (eds.) *The Origins of the Civilization of Angkor Volume 5: The Excavations of Ban Non Wat Part III: The Bronze Age*. Bangkok: Fine Arts Department of Thailand. Pp. 492-500.

**Gillespie, R.** et al. 2012. Man and

megafauna in Tasmania: closing the gap. *Quaternary Science Reviews* 37: 38-47.

**Hidalgo Tan, N.** and S. Chia. 2011. Current Research on the Rock Art at Gua Tambun, Perak, Malaysia. *BIPPA* 31 (2011): 92-107.

**Hung, H.C.** et al. 2012. Taiwan nephrite overseas and their Beinan cultural characteristics. *Field Archaeology of Taiwan* 15 (1):19-40.

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## X-Ray Diffraction Workshop



Ulrike Troitzsch with the X-ray diffractometer.

A workshop on X-Ray Diffraction was run in June by Ulrike Troitzsch from the Research School of Earth Sciences for students enrolled in the Masters in Archaeological Science program. After an introduction to the theory behind XRD and the X-Ray diffractometers used by the Earth Materials and Processes research team, students participated in the preparation of their own sediment samples recently collected from the historic wreck site Clarence in Port Phillip Bay, Victoria. Samples were collected by diving on the wreck from a laboratory-equipped jack-up barge – with facilities for X-ray imaging of retrieved objects - but not XRD. The samples are unusually clay-rich and maritime ar-

chaeologists on the ARC project think they may be clay ballast – described in 19<sup>th</sup> century records – but never before recovered from an Australian wreck site. Samples were run through two diffractometers at ANU and the results explained by Ulrike in terms of mineral identification and quantification.

Adele Zubrzycka, one of a group of ANU masters students who braved Melbourne weather at the Clarence wreck investigation in Port Phillip Bay in May, is continuing analytical work on the ballast samples with Ulrike as part of a personal research project. By determining the mineral composition signatures of the samples, she hopes to test whether the sediments are remains of clay ballast originating from north of Sydney, as the Clarence ARC research team have speculated.

Samples from sediments and materials ad-

hering to the wreck, as well as cores of sea-floor sediment, will be analysed by M Arch Sci students in the ANH Archaeological Science Laboratories, as part of the 3 year ARC Linkage Grant research program on which **Tony Barham** (M Arch Sci convenor) is a CI.

The XRD workshop was the first of several aimed at introducing the masters students to current research techniques used in archaeological science. Meeting potential mentors and supervisors across the ANU campus and identifying skill sets suited to application in archaeological research are core key outcomes.



Group discussion during XRD Workshop.

# Australian Fieldnotes

**Janelle Stevenson** and **Ulli Proske** trekked north again in May to Weipa on the Cape York Peninsula for a couple of days of coring at site known as Botchet Swamp. This work is part of the ARC project held by Sally and Janelle along with colleagues from Macquarie University and the University of Auckland and in partnership with Rio Tinto Alcan. The swamp and lake coring work aims to unravel landscape change and in particular the change in fire regimes through time from the region. Although the coring results were not that spectacular, when you have a skipper known to all as Pugwash, it has to be all good.

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**Helen Cooke** has recently returned from a month of scoping study in Weipa and is now missing the warm weather. She spent some time with the Wathayn people, getting to know them and thinking together about how

the archaeological and environmental studies on their land might be more useful for them.

**Helen** was fortunate to attend a ceremony to 'open' the house of an eminent elder who had passed on a year before. The house was purified with smoke from Ironwood leaves and relatives filed through, the elders assuring her spirit (in 'language') that it could go home in peace now. Ancient met modern when the smoke detector went off!

Then they went to Bowchat beach where the deceased had taken children for holiday camps for many years, teaching them the old ways and stories. After a senior male relative made three cuts in a small tree branch, Thankupi's name was 'cut' and they can use it again. **Helen** has a book of the Thaynakwith language and culture compiled by this remarkable woman if anyone would like to see it.

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The fire history team of Phil Higuera and Adam Young (University of Idaho), Andres Holz and Scott Nichols (University of Tasmania) and Simon Haberle braved a cold temperature snap in the central



Braving freezing temperatures in Tassie.

highlands of Tasmania in early May. They scoped out the prospects for developing a comparative study between charcoal records preserved in lake sediments and fire scars recorded in long lived trees (*Athrotaxis cupressoides*). Despite some heavy snow falls a 1km square area near the Walls of Jerusalem National Park and extensively burnt in the 1963 fires was chosen for future research (fieldwork to commence in mid December 2012). Contact Simon Haberle if you are interested in participating in this fieldwork.

"Ancient met modern when the smoke detector went off!"

After the Tasmanian trip Phil Higuera came to ANU and led over 20 participants in a Masterclass in charcoal analysis. The class was introduced to theory and application of charcoal particles preserved in lake and swamp sediments. Phil also took people through his CharAnalysis program that can be downloaded at <http://code.google.com/p/charanalysis/>



Smoking the house open.

## Conferences

**Geoffrey Hope** attended the International Peatlands Congress in Stockholm June 3-8 2012 and gave a talk on the survey and rehabilitation work carried out in the Snowy Mountains peatlands. Most delegates didn't know Australia has peat and the view from the plane flying over Russia for

hours revealed more peat per minute than in all the Snowy Mountains. However, our peatlands are still important and the rehab measures seemed similar to those being used to restore degraded and cut over peatlands in Europe and the USA. **Geoff** will give a rehab class to ACT park

rangers next week to show them what can be achieved.

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The deadline for abstract submission to the Australian Archaeological Association meetings is fast approaching. The deadline is July 6th.

## Travels Abroad

In April, **Stuart Hawkins** visited to the Bishop Museum in Honolulu to re-examine turtle bones from early human colonizing sites in the Solomon Islands (Tikopia, Anuta) and Tonga (Niuatoputapu). It was thought that, with giant land turtles having colonized Vanuatu and Fiji in pre-human times by floating on Ocean currents, one could expect land turtle bones being found in these early human colonizing sites which had significant quantities of "sea turtle" bones recorded. A distinct possibility considering that some land turtle bones from archaeological sites have been misidentified as sea turtle. During the two days at the Bishop, despite thousands of turtle and unidentified vertebrate faunal remains being re-examined from these three key contact human archaeological sites, only sea turtle bones could be identified. This raises more key questions about the distribution of land turtles in pre human times in the south east Pacific.

Thanks must go to Patrick Kirch for kindly giving permission for the re-examination of these materials and his enthusiastic willingness to potentially advance our knowledge in this direction despite potential revision of his own work. Thanks also go to Bishop Museum archaeologist, Jenny Kahn, and the museum collections manager, Summer Moore, for their invaluable assistance and support. **Stuart** is currently in Auckland checking additional archaeological assemblages for land turtle bones from Lakeba (Fiji), Tokelau, and Reef Santa Cruz (Solomon Islands) held in the Auckland University Anthropology Department with kind permission from Simon Best and Peter Sheppard.

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In March, **Janelle Stevenson** travelled to Bandung, Indonesia, where she was an invited speaker at an International



Workshop titled "The Towuti Drilling Project: Paleoenvironments, Biological Evolution, and Geomicrobiology of a Tropical Pacific Lake". The Institut Teknologi Bandung, Indonesia hosted the workshop which was financially supported by the National Science Foundation and the International Continental Drilling Program, Potsdam, Germany. The aim of the workshop was to develop a new collaborative research project between scientists in Indonesia, the USA, Canada, Argentina, Germany, Denmark, Singapore, the United Kingdom and Australia that will investigate environmental and climatic change in Sulawesi, Indonesia. The scope and scale of this project is the first of its kind anywhere in Southeast Asia.

"... only sea turtle bones could be identified."

## Research and Comedy in Kakadu

By: Billy O'Foghlu



A few weeks ago I journeyed up to the far north of Australia with others on a scoping mission to Darwin and Kakadu National Park. My thesis intends to deal with the

relationship between the archaeological earth and shell mounds of that region, so I had a fine time bush-bashing about the Blue Mud Bay region in Darwin in search of them. I found many, all of them interesting however I was rather shocked at my inability to find my way back to the car

without GPS assistance. I have since been informed that my horrendous sense of direction is down to one of two things: either my subconscious, inverted orientation in relation to the sun is to blame (established from years of living in the Northern Hemisphere), or my dim-witted sensibilities. I also had the privilege of studying an Orange Footed Scrub Fowl couple as they went about the seemingly unending task of constructing the nesting mounds my monument types are so often compared with.

In the Kakadu National Park itself, I had the honour of being present at a number of consultation meetings and public presentations that sought to promote discussion about the Kakadu project as a whole, and how it seeks to benefit both the individual commu-

nities and collective historical-consciousness of the region. I found the experience enlightening and eye-opening and I learned a lot about the cultural heritage of Kakadu.

Incidentally, I also made a number of startling discoveries. Firstly, I am completely immune to mosquitos, much to everyone else's jealousy. Secondly 36° C is apparently "oh not so hot really." Thirdly, hiking in such heat in full Lycra is the occupation of a dedicated madman (claiming you're a cyclist isn't a valid excuse). Fourthly, finally, and most importantly, Territory's Own Paul's Iced Coffee is truly as addictive as they say. At least in my caffeinated opinion. All in all the trip was an informative precursor to field-work that we hope to undertake.

# Rock Island Archaeology

During March and April, **Geoff Clark**, **Christian Reepmeyer**, **Jolie Liston** and **Ella Ussher** travelled to the islands of Palau in Micronesia for five weeks of fieldwork aiming to investigate the abandonment of the famous limestone Rock Islands. This was the first stage of a three year multidisciplinary project that will involve a number of collaborators from both here at the ANU and abroad, using a range of different archaeological and palaeoecological techniques. The first season involved exploratory subsurface test-pitting on a number of Rock Islands, as well as high resolution analysis of archaeological sediments involving flotation and wet sieving, and finally mapping visible archaeological features.



Ella at home in a taro patch.

High resolution test-pitting was carried out within the confines of stone-work villages at two different sites, Ulong and Mariar. **Geoff** has carried out some excavations at Ulong in the past, and knew that the stratigraphy showed an early possibly seasonal occupation of the island that possibly began around 2500 BP, and later more permanent settlement at around 1000 BP. It was this later end of the sequence that was most relevant to the current investigation of island abandonment, and so a test pit was excavated to around 1 metre in depth. In contrast, the deposit related to the permanent occupation of Mariar was much shallower, reaching a basal depth of only 50 cm. The excavated material was first processed using flotation to collect the light fraction such as seeds and charcoal. The sediments were then wet-sieved to remove the soil but retain any shell, bone, pottery, larger charcoal fragments, and lithic material. Finally, another test-pit was excavated at Ulong to further investigate the relationship between the early and later progressively intensified settlement on the island. The material from this test-pit was sieved to collect charcoal, shell and arte-



Waiting for the boat back to Koror.

facts. After several days excavating, the back-curving rim of a pot was revealed. This pot turned out to be almost intact, with only the base broken, and around 45cm in diameter and 60cm tall. Another smaller pot was then found abutting this first pot, and was similarly only broken at the base. They appeared to have been set into the sterile beach sand, possibly to function as an early well system that caught the aquifer as it rose above the tidal water. Tests confirmed the presence of fresh water, which would have been an essential variable enabling survival within the Rock Islands. These pots are now in Australia for reconstruction and then will be analysed for residues, construction technology and dating before returning to Palau next year.

“... the back-curving rim of a pot was revealed...”

## Recent Publications Continued

Continued from Page 4

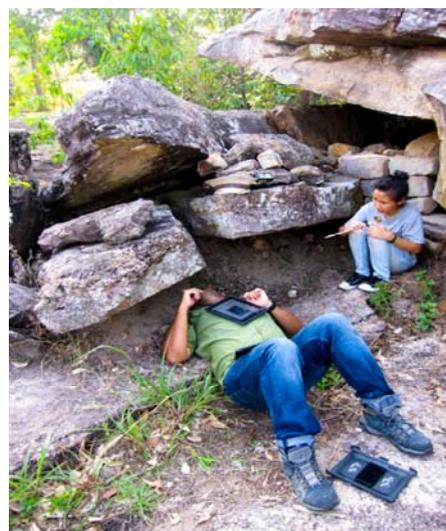
**Rule, S.**, B.W. Brook, **S.G. Haberle**, C.S.M. Turney, A.P. Kershaw and C.N. Johnson. 2012. The Aftermath of Megafaunal Extinction: Ecosystem Transformation in Pleistocene Australia.

*Science* 335: 1483-1486.

Zheng, C. and **H.C. Hung**. 2012. Later hunter-gatherers in southern China, 18,000-3000 BC. *Antiquity* 86 (2012): 11–29.



Wallaby in the snow, Tasmania.



Noel recording rock art under a collapsed rock shelter in Phu Phra Bat Historical Park, Thailand.

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Research in Archaeology and Natural History at the ANU School of Culture, History and Language aims to understand prehistoric human societies, the environments in which they developed and the environmental consequences of human presence. Departmental research ranges from southeast Asia and the Pacific, through the tropical forests of New Guinea and the savannahs of Australia, to the islands of Oceania.

Field research in ANH is supported by well-equipped laboratories that were fully updated and refurbished during 2009. Our laboratories support research into prehistoric textiles, archaeobotanical remains, rock art, prehistoric environments, zoological material and ceramics. ANH houses the largest pollen reference collection in Australia, as well as plant, bone, shell and ceramic collections. We also have access to world-class ANU facilities for archaeological dating, stable isotope analysis, and electron microscopy.

## Upcoming Events ...

### Morning Teas

3rd July - Hosted by Sue Rule and Simon Haberle, 10:30 am

7th August - Hosted by Matt Prebble and Jean Kennedy, 10:30 am

4th September - Hosted by Feli Hopf and Christian Reepmeyer, 10:30 am

### Lunchtime Talks

Please sign up for empty time slots with Janelle.

### Conferences

8-13 July 2012: Easter Island and Pacific Conference, Santa Rosa, California

23-30 August 2012: 13th International Palynological Congress and 9th International Organization of Palaeobotany Conference, Tokyo, Japan

9-13 December 2012: Australian Archaeological Association Conference, Wollongong, NSW