KIMBERLEY FOUNDATION AUSTRALIA

Researching, preserving and promoting Kimberley rock art.

WINTER 2016 NEWSLETTER

Image: L-R Helen Green, Jordy Grinpukel, Sven Ouzman, Damien Finch at rock art site.

Photo: Paul Hartley

Concerted effort and technical firepower focused **on dating Australian rock art continues**

On the eve of their third field season researchers on the KFA-sponsored *Rock Art Dating* project are excited to be going back into the field next month. Their goal is to return to sites visited last year and collect multi-layered mineral accretions on and off rock art to substantiate their work to date on uranium series and radiocarbon dating.

Considerable progress has been made on sample material from the 2015 field seasons at coastal and inland sites in the north Kimberley with more than 30 radiocarbon dates measured over the last few months on material from mud wasp nests to test suitability for dating rock art. The first results from cosmogenic radionuclide dating are also now underway.

Working with Balanggarra Traditional Owners, archaeologists from the University of Western Australia, nuclear physicists and geoscientists from ANSTO, the University of Melbourne and the University of Wollongong, the multidisciplinary team has analysed radioactive decay within tiny flakes of mineral crusts that have developed over or been present underneath paintings, gradually narrowing age brackets on the art with hundreds of samples.

The team at the University of Melbourne has identified magnesium phosphate minerals on the art that consistently contain traces of uranium. This characterisation forms the basis of ongoing efforts by Dr Helen Green to develop a robust uranium-series dating method applicable to sandstone landscapes, which opens up a whole new system for dating rock art, separate to carbon dating. So far, 88 uranium-series dates have been determined and the work on mineral accretion characterisation and uranium series dating methods is now in preparation for publication.

A major challenge facing the research is to determine how much decay-product Thorium was present when the mineral accretions formed. This 'initial' Thorium content needs to be known in order to produce reliable dates. The objective now is to collect additional thick, 'off art' samples from inland sites which can be used to characterise variations in initial Thorium concentration over time at various locations.

> "We have made great strides in understanding how these different dating systems can be applied to Kimberley rock art sites and are now getting our first results on samples directly related to the art itself" says Project Leader Prof. Andy Gleadow.

"The results still need a lot of work on them but the first indications are very encouraging."

Regardless of how old the art proves to be, the dating methods will have wide applicability and the results will reveal how changes in the art related to an evolving natural environment. Putting a solid date on our relatively unsung treasure will guide conservation plans into the future – a major objective for the KFA.

The Dating project is supported by the Australian Research Council and Kimberley Foundation Australia. Partners include the University of Melbourne, the University of Wollongong, the University of Western Australia and ANSTO. Partner Investigators include Dunkeld Pastoral Co Pty Ltd, Kimberley Foundation Australia and Archae-aus Pty Ltd. The work is being done in collaboration with Balanggarra Aboriginal Corporation.

The Kimberley may contain one of the largest surviving figurative bodies of rock art yet dated

The ABC's *7.30 Report* aired a 6-minute story on the Australian Research Council KFA-funded *Rock Art Dating* project in November 2015.

The ABC's *7.30 Report* profiled archaeologists and Aboriginal elders engaged in the most comprehensive dating project of rock art carried out in the Kimberley region.

The story follows Peter Veth, Kimberley Foundation Ian Potter Chair of Rock Art (UWA), leading geochronologist Andrew Gleadow, and Helen Green from The University of Melbourne into the Northern Kimberley as they set out on their research. It shows how the research is transforming 'Eurocentric notions' of early settlement in Australia by capturing attention around the globe of the Kimberley's rock art, described by Veth as "probably one of the earliest and largest concentrations of figurative art surviving anywhere in the world."

The segment draws on the comprehensive processes involved in rock art dating. Alongside Traditional Owners Ernie Boona and Mark Unghango, Dr Helen Green is seen delicately chiselling tiny particles of the rock to gather a sample that will be assessed back at the Melbourne Uni lab. The team return to the University and record dozens of tiny samples taken daily from the sites.

By sampling the mineral crust that has formed over the top of the artwork over time, it can be determined that the age of the artwork underneath must be older. The team's mission is to uncover when the artworks were created in order to build up a time frame that tells the story of Australia's earliest settlement history.

The segment captures the excitement of the researchers. Peter Veth says they are "literally on the cusp now of dating it properly". To view the segment visit 'Latest News' on KFA's homepage **kimberleyfoundation.org.au**

Wet season yields results

A week-long field excursion during the 'wet', aimed at observing and identifying processes occurring on rock surfaces during wetter conditions, took place in February. *Dating project* researchers Helen Green, John Dodson, Damien Finch and KFA Science Advisory Council member Cecilia Myers carried out reconnaissance fieldwork with helicopter pilot Nick Sundblom who was also part of the team.

For reliable radiocarbon dating remnants of older mud wasp nests, researchers must first prove that nests currently under construction return a modern age. The team located mud wasps and followed their route from mud source to the nest under construction on rock shelter walls. Detailed photographs and samples of these nests will vastly improve our understanding of the sources of carbon for radiocarbon dating of 'on art' nests within this project.

Uranium series and radiocarbon dating of mineral accretions forming both under and over the rock art will provide bracketing ages for the different art styles in the Kimberley. For the reliable application of these techniques, it is important that researchers can prove the origin of the accretions. During this trip, accretions unrelated to art sites were collected, as were water samples and swabs of microbial matter forming on the drip lines of shelter walls.

Lichens, proposed as a primary pathway for the formation of certain minerals, and active predominantly during the wet season, were also identified and sampled.

By the time the team return to the field in the 'dry' (July) these samples will have been processed, aiding their targeted sampling of 'on art' material, as well as using the generated data to support the emerging ages. This pioneering work will provide some of the first wet season data to support rock art dating results in the Kimberley.

Image: L-R Damien Finch, Nick Sundblom, John Dodson and Helen Green examine a fresh mud wasp nest.

Photo: Cecilia Myers

Sediment records to shed light on climate and environmental change

A team of researchers from The University of Queensland and University of Wollongong is using microscopic fossils found in sediments at a spring in the northwest Kimberley to reconstruct the region's environmental history.

Early results show dramatic fluctuations in monsoon rainfall over the last 15,000 years followed by a sharp reduction in rainfall around 2,600 years before present, before recovering to conditions similar to present-day around 1,000 years ago.

Additional springs were sampled in the 2015 dry season with various elements extracted from sediments for scientific dating. With input from experts at the Australian Nuclear Science Technology Organisation, dating of these sediments is being used to pinpoint when changes in the fossil record occurred. The degree of similarity between the sites will then shed light on whether the changes seen in sediment records are the result of regional synchronous climate and environmental change or are simply local in nature.

Image:
L-R Hamish McGowan and Emily Field, University of Queensland, sampling Mud Springs, North Kimberley.

Photo: Sam Marx

Tick tock there's a clock in that rock

Understanding cosmogenic dating

We talk about 'dating' the rock art, but it's equally important to understand the changing climate as well as the changing landscape. 'Dating' rock art also means learning about and understanding how the landscape is changing.

It might surprise you, but a lot about 'dating' can be learnt from high above the ground. From a chopper you can see the ancient and the more recent elements in the landscape. Dr David Fink a principal research scientist at the Australian Nuclear Science and Technology Organisation is the nuclear physicist on KFA's *Dating project*.

"We're learning about how the landscape is changing and we want to know how fast it's changing on timescales of anywhere from a few thousand years to a few hundreds of thousands of years," he says.

Cosmic rays come in through the atmosphere and some of them hit the surface rocks and change the nucleus of the constituent elements of the surface rocks into a radioactive isotope.

Explaining cosmogenic dating David says "when the rock is exposed to cosmic rays over a long period of time these special atoms, which are naturally occurring radioactive atoms of all different half-lives, start ticking away. So effectually the rock is like a clock."

It's a challenge to cosmogenics he says because rocks are breaking out everywhere at all different time scales. There are hundreds of them so you have to carefully pick which one you want. The *Dating* team is picking the slabs that have fallen from rock shelters where there is art.

"Our technique is looking at how the landscape is changing over different time scales. The sensitivity of the technique is that we're looking at tens of millions of atoms in half a kilogram of rock. Our machines at ANSTO are able to measure the concentration of those special atoms to tell us literally how the landscape is changing with time. From that we hope to find out how the artwork, which is related to the landscape change, is constrained by the landscape."

That's the big picture just from one little atom. All rocks have got clocks!

Image:
Dr David Fink from ANSTO takes measurements in the field.

Photo: Andy Gleadow

A decade of achievement in **Kimberley rock art research**

In November last year the Foundation hosted its tenth workshop with the KFA Science Advisory Council. Thirty scientists funded by KFA came together to report on progress and present and share their research findings with each other and with the KFA Board.

In summarising the Foundation's philanthropic approach to research John Dodson, former head of ANSTO's Institute for Environmental Research and currently at the Institute of Earth Environment, Chinese Academy of Sciences, Xi'an, said that KFA's model of a multidisciplinary and multi-organisational approach was extraordinarily successful. He said the proof of this is in the record number of Honours, Masters and PhD students involved in KFA-funded research; in the funds leveraged and grant successes; in the multiple number of publications and the growing media and public attention.

The body of knowledge gained over the last decade has been both critical and considerable. In particular, a growing palaeoenvironmental framework for the region is being constructed and will be a focus of on-going research.

Image:
World's oldest known ground-edge stone axe found in the Kimberley, WA.

Photo: Australian National University

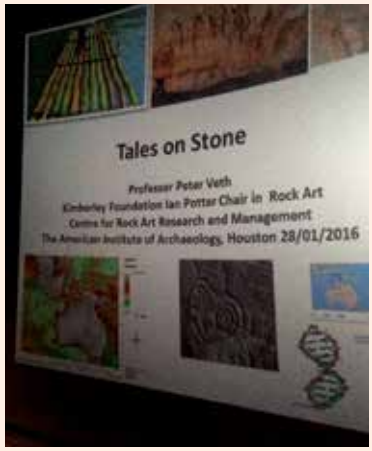
World's oldest known ground-edge stone axe found in the Kimberley, WA

Archaeologists from the Australian National University have unearthed fragments from the edge of the world's oldest-known axe. The study involved researchers from a number of universities and was published in the journal *Australian Archaeology* this month.

The project was an Australian Research Council Linkage grant awarded to Professor Sue O'Connor at The Australian National University (ANU) and Professor Jane Balme of The University of Western Australia, Chief Investigators of the KFA-sponsored *Lifeways project*. Although the site was excavated in the early 90s the redating and reanalysis of artefacts by Tim Maloney at ANU has been funded by the *Lifeways* project. The discovery was cited in KFA's annual lecture delivered by Jane Balme in 2015: *50,000 years of Aboriginal people in the southern Kimberley.*

The flakes were part of an assemblage of ancient stone tools Prof O'Connor found in Windjana Gorge National Park, west of Derby. Dating has put the collection at between 46,000 and 49,000 years old, matching the period when Aborigines are thought to have landed in Australia.

"The tool would have been suitable for chopping down trees, removing the bark and fashioning spears," says Prof O'Connor. She said polishing marks were still clearly visible on the flakes, and tools this sharp would have required handles. To read more visit 'Latest News' on KFA's homepage **kimberleyfoundaton.org.au**



Houston Texas treated to **Kimberley rock art riches**

Professor Peter Veth, Kimberley Foundation Ian Potter Chair in Rock Art at UWA gave a keynote address on Kimberley rock art at the Houston Museum of Natural Science earlier this year.

He introduced a viewing of *First Footprints*, the Walkley-wining ABC series on Indigenous heritage and archaeology. The series was launched at the Houston Museum of Natural Science on an IMAX screen. Peter also gave presentations to four preparatory schools as well as an invited lecture to faculty from the University of Houston.

Image:
Prof. Peter Veth's lecture for the Archaeological Institute of America, Houston.

Photo: Peter Veth

Image:
L-R Jean-Michel Geneste and Director of the Lascaux IV replica project.

Photo: Peter Veth

Rock art cave replica has **600,000+ visitors in 6 months**

Peter Veth accompanied the Director of UWA's Centre for Rock Art Research+Management, Jo McDonald, to France in February this year. Peter and Jo made a number of visits to key Paleolithic sites, including Chauvet, where they were hosted at the Ministerial level by Dr Geneviève Pinçon, Director of the Ministry of Culture and Communications. They visited the newly opened replica which has received more than 600,000 visitors in its first six months.

Colleagues Drs Gilles Tosello and Carole Fritz led the tour to Chauvet Grotte the Pont d'Arc (featured in the film *Cave of Forgotten Dreams*) and Le Tuc d'Audoubert (featuring clay bison bas-relief sculptures). The visit to the Perigord also included a visit to Courgnac Cave and to the workshop where the new Lascaux IV replica is currently under construction.

Jo McDonald was a Visiting Professor at the Université Toulouse 2 Jean Jaurès. Peter and Jo co-presented a lecture on ethnography with a specific focus on Kimberley rock art.

Image:
Image of the horse's head frieze from Chauvet Cave.

Photo: Peter Veth

Canberra lecture attracts a **full house and national media**

The global significance of Kimberley rock art was the subject of a KFA lecture delivered at the National Museum of Australia, Canberra last month by Prof Peter Veth. Booked out weeks in advance and attracting national media Peter Veth said "Kimberley rock art may be as old as the cave masterpieces of Europe and should be recognised as such."

Visit latest news on KFA's website **kimberleyfoundation.org.au** to hear the RN interview on Fran Kelly's Breakfast show and KFA's Facebook page for an excerpt of ABC TV News 24; **facebook.com/kimberleyfoundationaus**

The French are coming

The Australian Research Council KFA-sponsored *Kimberley Visions* project has an impressive team of French researchers participating in field trips to the Kimberley during July and August this year. They are world leading French geomorphologist Jean-Jacques Delannoy and renowned archaeologist Jean-Michele Geneste. Delannoy is at the Université de Savoie and is Director of the research laboratory EDYTEM (Environment, Dynamic and Mountain Areas). He led the scientific committee which advised the French government on the famous Chauvet cave replica. Geneste is at the Université de Bordeaux 1 and for more than 25 years has focused research on Palaeolithic sites in France. He manages the primary national rock art research laboratory in France – the Centre National de Préhistoire – whose major focus is the study of rock art recording, mapping and related archaeological deposits and site management.

The French teams have carried out cutting-edge research in the recording, analysis, conservation and public interpretation of some of the most significant rock art sites in the northern hemisphere.

YOUR SUPPORT

Your support allows us to fund scientific research in the Kimberley. We support a broad range of scientists from the fields of archaeology, geology, palynology and related areas who work with Aboriginal communities to uncover Australia's earliest settlement history. Support KFA and ensure the rock art is recognised for its world-wide significance and protected accordingly. All amounts over $2 are tax deductible. **Donate today: kimberleyfoundation.org.au**

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KFA acknowledges the support of The Ian Potter Foundation

Paddy Nyawarra (Neowarra)

1 July 1930 – 25 November 2015

The Kimberley Foundation was saddened to hear of the death of senior Ngarinyin elder, Paddy Neowarra on 25th November, 2015. Paddy Nyawarra (Neowarra was his anglicised name) was the last of the four traditional elders who established the 'Bush University' with Hannah Rachel Bell and founding KFA director Susan Bradley. This became the Wandjina Foundation (which Neowarra and Laurie Cowanulli named) and subsequently the Kimberley Foundation Australia.

Nyawarra (his bush name) means black rock. This is from an area in Galarungarri on the Calder River around Carr Lagoon where Paddy has his wungurr. Paddy's spirit came out from Yowbada and Byaliga (bailer shell) at a place called Willinba.

Nyawarra was born in the bush north of Pantijan in the 1930's. His parents were Taylor Manunggu and Judy Muru. They went to Kunmunya when Paddy was an infant. There he was baptised along with Jimmy Maline by Rev. John Love. From Kunmunya when he was about 15 he moved with his family to Munja and stayed there until it was closed down and they moved to Wotjalum. He lived most of his adult life on old Mowanjum 10 kms outside Derby and moved to the new site on the Gibb River Road when the government closed the old Mowanjum.

Paddy Neowarra's love and knowledge of country and culture was the foundation of the Wanjina Wunggurr Wilinggin Native Title claim which was handed down in 2004, determining that Ngarinyin people had unbroken connection to their traditional lands pre-dating arrival of Europeans and were the rightful custodians of this country. He took his gudia friends to rock art galleries where he shared the mythology and his stories.

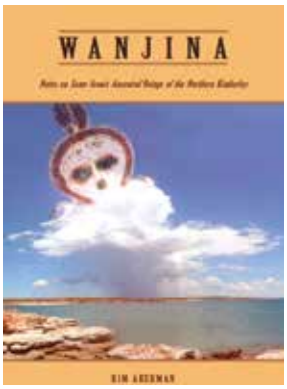
Paddy was a much loved and respected Ngarinyin leader. The Kimberley Foundation extends its sympathy to all the Ngaringin people and especially to his children Jason, Leonie and Kane and to Keith Nenowatt, Robin Dann, Jesssica and Lynette.

Rest in peace Neowarra.

Kim Akerman's new book **Wanjina:**

Notes on Some Iconic Ancestral Beings of the Northern Kimberley.

Now available direct from Hesperian Press:
www.hesperianpress.com/index.php/order



Everything you want to know about **KFA and Kimberley rock art**

KPMG hosted a special KFA Q&A session in Sydney in April. Chaired by Simon Mordant AM the expert panel featured KFA Chairman Maria Myers AC and Directors Nolan Hunter, Susan Bradley and Prof Andy Gleadow.

The Foundation is following up with a Q&A event in Perth to be chaired by Andrew Forrest on 21 June at the University of WA and one is planned for Melbourne later in the year. Let us know if you would like to attend.

Image: KFA Q&A lunch at KPMG Sydney in April 2016. Guests:

Simon & Catriona Mordant

John Mullen & KPMG's Matt Webb

John Sharpe & Claire Armstrong

Maria Myers, Chairman KFA & Cathy Harris

Jane & Rob Woods & Jacqui Mullen

Images courtesy Kimberley Foundation Australia. **Designed by** Michelle Galea.