Australian museum
nature culture discover

**Summer** December 2011 to February 2012

VOLUME 33 NUMBER 4

# explore

## *culture*

BEHIND THE SPIRIT MASKS OF MELANESIA

## *people*

DR JOANA ZANOL AND HER NEW BLOODWORMS

## *nature*

OCEANS FACE THE LITMUS TEST

## *discover*

MAWSON, PIONEERING SCIENTIST IN ANTARCTICA

# *questions of* CULTURE AND SCIENCE

**What is 'culture'? I had cause to ask this recently as part of the Museum's input to the development of a national cultural policy. In the past, such policies have tended to equate culture with 'the arts', but surely culture is much broader than that.**

Anthropologists have debated this question for years, but in looking for answers I came across the author Antoine Saint-Exupéry who wrote: 'A civilisation is a heritage of beliefs, customs and knowledge slowly accumulated in the course of centuries'. He added that the outcome of these elements was justified if they lead us to reflect on our personal and collective experiences. This seems a good working description of what makes up culture.

### PURPOSE

I've also been reading Edmund de Waal's extraordinary book *The Hare with Amber Eyes*. De Waal uses a collection of netsuke (Japanese miniature sculptures) to tell a story about several generations of his family and the cultures they lived in, from nineteenth-century Paris to Vienna under Nazism and to post-war Japan. His book illustrates the power of objects to reveal interesting stories, which to me is why we build and maintain cultural collections.

A national cultural policy then should help us to understand what makes up a picture of Australia's own 'heritage of beliefs, customs and knowledge'. We in museums are a key part of this picture, as are the art galleries, archives, libraries, heritage centres and historical societies that each provide pieces of the overall cultural jigsaw puzzle.

You need look no further than this issue of *Explore* to find examples of interesting stories from Museum objects, such as the small collection of scientific instruments from pioneering Antarctic scientist Douglas Mawson, or the examples of Melanesian masks from the Pacific collection, the like of which provided inspiration for Picasso and other modern artists. Also, enclosed is the annual *Highlights & Snapshots* report summarising the Museum's performance over the last year.

### FEEDBACK

My support for climate change science in the last edition of *Explore* attracted a spectrum of comments, from praise to condemnation. In responding to these, I drew attention to Skeptical Science, winner of the 2011 Australian Museum Eureka Prize for Advancement of Climate Change Knowledge. Skeptical Science won this coveted award for its website, www.skepticalscience.com, and I commend this site to you for its exposé and rebuttal of misinformation about climate change and global warming.

A lesser known aspect of climate change is ocean acidification, introduced in this issue by ecologist Dr Alan Jones. It's a growing environmental problem that has the potential to devastate marine ecosystems.

That's something for us all to ponder as we visit the beach in the coming holiday season.

**FRANK HOWARTH**
Director of the Australian Museum

# south

**Above**
Mawson's sun compass was a low-tech yet vital navigational tool.

**Left**
The propeller from Mawson's 'air tractor' is a reminder of the explorer's enthusiasm for new technologies in the face of the unknown, says Colin Macgregor (pictured). Photos Stuart Humphreys.

Mawson was enthusiastic about new technologies and saw great potential in exploring the region from the air. But his plan to ship a small aircraft to Antarctica came undone when the plane crashed during a test flight in Adelaide. Undaunted, he had the smashed wings removed and shipped the fuselage south to haul supplies as an 'air tractor' around the base he'd established at Cape Dennison. The wooden propeller from this, the first aircraft to be used in the Antarctic, is part of the Museum's collection.

Mawson could also see the benefits of radio in remote areas, and he set up the first radio link to the Antarctic continent via a relay station at Macquarie Island. However, radio was not so advanced as to be useful for the long overland sledge journeys into the interior.

## SUN COMPASS

Two small instruments from the expedition were crucial for navigating in this harsh, unforgiving and unexplored environment.

The first is a small, hand-hewn circle of wood with a nail through the middle. It appears at first sight to be a child's toy and the label, 'sun compass', belies its value. On its own in polar regions, the magnetic compass becomes all but useless for accurate navigation because the magnetic poles are many kilometres from the geographical poles. Alternative means of navigation were needed, so these explorers relied on sightings from the sun and stars in combination with an accurate clock and compass to plot their course.

This modest home-made sun compass was effectively a portable sundial and a vital tool. Each sledge was equipped with one, securely tied in place to prevent their loss.

# *on the* RECORD

## SNAILS COME FIRST

Museum malacologists have won this year's Whitley Medal for the best book on the natural history of Australian animals. Technical officer Michael Shea and research associates John Stanisic, Darryl Potter and Owen Griffiths were awarded the medal by the Royal Zoological Society of NSW for their book *Australian Land Snails*. It is, according to the Museum's Dr Frank Köhler, the result of a journey to discover 'the endless variety of shapes and colours, as well as the incredible diversity of species'.

Read the full story at **www.australianmuseum.net.au/BlogPost/Science-Bytes/Museum-Scientist-Whitley-Medal**.

## EXPLORE ONLINE RESOURCES

Wouldn't it be great if you could find all your favourite *Explore* stories, movies, image galleries and blogs in one place? We think so; that's why we've created a new online portal for *Explore* magazine with timeless stories about the Museum and its collections, the latest news about Museum research, opinions on topical issues, and links to a whole world of nature and culture.

Just go to **www.australianmuseum.net.au/explore-magazine** and start exploring!

# *your* SAY

Send your feedback about *Explore* magazine to the Editor at **explore@austmus.gov.au** with your name and contact telephone number. Contributions will not necessarily be published and may be edited for length.

## WHAT MOTH IS THAT?

Several readers let us know that, in the last edition of *Explore*, the illustration on page 3 showed moths, not butterflies as stated in the caption. The oversight was mine. Ms Barbara May correctly identified them as the lily caterpillar and moth, *Spodoptera picta*. Dr Dave Britton has identified the moth on page 4 as a fruit-piercing moth, *Eudocima salaminia*.

*The Editor*

# ONE PEOPLE

THE CANNING STOCK ROUTE IN OUTBACK WESTERN AUSTRALIA IS THE WORLD'S LONGEST HISTORICAL STOCK ROUTE. NOW 100 YEARS OLD, THE TRUE STORY BEHIND THE ROAD CAN BE TOLD.

**Right**
*Uramot Baining* night dance masks, East New Britain, Papua New Guinea. During the male initiation dance of the Uramot Baining, large barkcloth masks are worn by initiates who dance and leap over large bonfires, the ritual lasting all night. A similar mask is displayed in the *Spirit Faces* exhibition. Photo © kirklandphotos.com, courtesy Papua New Guinea Tourism Promotion Authority.

**Opposite**
Benin-style bronze mask, Nigeria, West Africa. Most of the bronze heads in the former Kingdom of Benin, Western Nigeria, were created in honour of kings (obas) and were passed on from king to king. The obas reigned by hereditary succession and had absolute spiritual, political and military power. Photo Australian Museum. *E76292*

Museum of the Trocadero in Paris in 1907 deeply impressed him. He later wrote: 'If we give form to the spirits, we become independent of them. The spirit, the unconscious, emotion – it's the same thing. I understood why I was a painter. All alone in that awful museum, the masks, the Red Indian dolls … *Les Demoiselles d'Avignon* [1907] must have come to me that day, but not at all because of the forms [but] because it was my first canvas of exorcism …'

Picasso was moved by the abstract expressive representations of the artefacts in that collection and the ritualistic possibilities of their use, rather than as mere objects to be looked at or even admired. He recognised in those masks a sense of psychological 'otherness' and a symbolic connection to a larger view of humanity.

Picasso and other early modern artists through their responses helped encourage a broader appreciation of the rich variety of humanity and culture outside the art circles of the West. But it was not until the 1920s that these non-Western styles ceased to be 'primitive' and became known as 'tribal art'.

## BEHIND THE MASKS

Masks possess a rich symbolism and psychology that resonates throughout history and cultures, with their near-universal links to identity, the subconscious and the supernatural.

On one level, masks symbolise our ability to change or transform, to go to other worlds or communicate with and appease the supernatural. In many cultures, masks act to fulfill the desires and challenges to which societies must respond in order to prosper, to maintain balance or strengthen identity.

Across Melanesia, in Papua New Guinea, New Caledonia and Vanuatu, masks are instruments of revelation, used in celebrating important periods of the ceremonial life cycle. They promote the community's prosperity and fertility, with the masked figure often a key participant in these rituals.

For example, the huge Mandaska masks of the Uramot Baining people of New Britain (see page 9) represent the spirits of particular leaves and trees. The masks are traditionally used in celebrations held for the newborn and initiated, and for more contemporary events such as the openings of schools and churches.

Other forms of masks are found in complex and elaborate funerary rituals, such as those in Southern Malakula, Vanuatu. Masks such as the large overmodelled headdress (see page 10) represent the spiritual aspects of a particular *nalawan* (sacred knowledge society). During funerary rituals, the mask becomes the abode of the portrayed spirit and becomes one with the wearer.

Spirit masks are also found in the northern central area of La Grande Terre in New Caledonia. Certain types of Kanak masks represent a series of spirits linked with chiefly lineages, while others are associated with creation or the underwater world of the dead, the latter decorated with masses of coiled human hair worn on top of the mask.

Whatever the origin of their identity, or the myths, shapes and materials used in their making, masks have come to be associated with the supernatural. In some Melanesian cultures, the mask holder is believed to be the conduit of life into the object.

We in the West may consider such masks to be tribal art, and a masked figure as a person disguised, but in most Melanesian societies such masked figures *become* the spirits – the wearer of a mask becomes whatever his disguise represents, and their movements during performances emulate the characteristics of the associated spirit form.

Add to this the theatricality of many rituals and you can perhaps begin to appreciate the powerful illusions created for the mesmerised Melanesian audiences gathered for ceremonies and rituals. Such effects are at the core of the mystification behind masks.

## SECRECY AND MYSTERY

In some Melanesian societies, masks retain their power in part because of the heavy veil of secrecy and mystery surrounding their nature and use. The materials used – shells, feathers, wood, barkcloth, seeds, human hair and animal teeth – help to hide the transformation of the initiated man into a masked figure whose identity remains hidden from the public.

These views are worth reflecting upon. It is perhaps our unqualified Western sense of realism and logical thinking that prevents us from adequately responding to the deep significance of some Melanesian masks.

In attempting to understand them, we may first need to develop the attitudes of Picasso and other European artists and share in the sense of mystery, respect and admiration that gives these masks such extraordinary appeal.

**YVONNE CARRILLO-HUFFMAN** COLLECTIONS OFFICER, PACIFIC, CULTURAL COLLECTIONS AND COMMUNITY ENGAGEMENT

*Spirit Faces* opens at the Australian Museum from 11 February 2012. This new display showcases 19 examples of stunning masks from Papua New Guinea, Vanuatu and New Caledonia.

**Further reading**

**JD Flam & M Deutch (eds), 2003. *Primitivism and Twentieth-Century Art: A Documentary History*. University of California Press, USA.**

**J Guiart, 1987. *Mythologie du masque en Nouvelle-Calédonie*. Publications de la Société des Océanistes, Paris, France.**

**K Huffman, 2001. *Nalawane Kamen Senawah Wutmes*: Our Traditions – Nalawan rituals – refused to die, *Muse*, Spring edition, pp 6–7.**

**JW Nunley & C McCarty, 1999. *Masks: Faces of Culture*. Harry N Abrams, NY, USA.**

THE OCEANS CONTINUE TO ABSORB MUCH OF THE CARBON DIOXIDE WE EMIT, BUT ARE THEY REACHING BREAKING POINT? ASKS ECOLOGIST **ALAN JONES**.

**Opposite**
On the surface all is normal, but beneath the waves irreversible changes threaten marine life. Photo Jeremy Austen.

**If the Devonian Period was the Age of Fishes and the Jurassic the Age of Reptiles, then surely we are living in the Age of Humans – the Anthropocene. This term has been proposed to cover the last 150 or so years because of the huge growth of the human enterprise, especially since 1950.**

This growth has yielded numerous amazing human benefits but is now of sufficient scale to affect most ecosystems and the biophysical processes of Earth itself.

Quite simply, we are changing the way the planet works.

## BOUNDARIES

Everyone has heard of the greenhouse effect and global warming. They are caused by emissions of greenhouse gases into the atmosphere – particularly the 30 billion tonnes of carbon dioxide ($CO_2$) generated annually by human activity.

But not everyone knows that the oceans absorb about one-third of this $CO_2$, which combines with water to produce carbonic acid. Measurements show that surface water acidity has increased by 30% in the last 150 years, overwhelming the chemical buffering capacity that helps maintain a natural slightly alkaline level in seawater.

So the oceans are not only warming (and rising as the ice caps melt), they are turning sour – and the process is accelerating. By 2100, scientists estimate that seawater could become 150% more acidic, a larger change than any in the last 20 million years.

But why is it a problem? According to the Stockholm Resilience Centre, oceanic acidification is one of nine planetary boundaries which, if exceeded, have the potential to cause catastrophic environmental damage. And the Royal Society has warned that ocean acidification is essentially irreversible; it would take tens of thousands of years for ocean chemistry to return to pre-industrial conditions.

## WATER CHEMISTRY

For the great diversity of species that live and grow in seawater, changes in water chemistry may pose a threat. To select a few examples, we know that falling pH (increasing acidity) causes acidosis of tissues and body fluids, which in turn reduces the growth of many species including mussels, oysters, sea urchins and gastropods. Acidity also reduces the development and survival of the early life stages in sea urchins, brittle stars and corals.

Increasing acidity has other, more insidious, effects by reducing the availability of free carbonate ions in favour of increasing bicarbonate ions. Unfortunately, carbonate is needed by calcifying species to build shells and skeletons. Lots of animals grow in this way, in particular corals, crustaceans, echinoderms and molluscs, as well as some single-celled plants and other algae. These may struggle in acidic conditions – especially in colder waters where the solubility of $CO_2$ is increased. More dissolved $CO_2$ means more acid, less carbonate and fewer carbonate life forms.

In Antarctic waters, certain phytoplankton called coccolithophorids account for much of the photosynthesis (a process using energy from the sun to generate complex molecules that form the base of the food chain). But coccolithophorids, being carbonate dependent, are at risk from acidification. If they cannot adapt or be replaced by other non-calcifying phytoplankton, the entire food chain consisting of phytoplankton-eating krill and pteropod sea butterflies (both of which are also carbonate dependent) – and the fish, penguins and whales that depend on them – may collapse.

## CORAL REEFS

In warmer waters, coral reefs are already under pressure. The Great Barrier Reef is a huge calcium carbonate platform that is under stress from warming water (causing coral bleaching), excess sediments and nutrients (causing algal overgrowth) and stronger storms (causing reef collapse).

To this list we can now add acidification, which impedes the calcifying ability of both corals and red calcareous algae, organisms that enhance the structural integrity of reefs.

All of these pressures, singly or together, have caused more damage to coral reefs since the 1970s than at any other time in the last 220,000 years. A CSIRO study of natural $CO_2$ seeps at Milne Bay showed that the diversity of corals fell by 40% with the reef becoming dominated by just one type, the massive *Porites*.

Send your query to the *Search & Discover* team, email **sand@austmus.gov.au**

# search › DISCOVER

**Q.** *We found this caterpillar on private property near the Springbrook National Park (Qld). Can you tell us about it?*

According to Museum entomologist Dr Dave Britton the caterpillar is from an endangered species, the Pink-underwing Moth, *Phyllodes imperialis*. More than this, it's an as-yet undescribed southern subspecies which is also endangered!

Orchardists consider them pests, naming them 'fruit piercing moths' – incorrectly, as the butterflies and caterpillars lack the mouthparts to do more than suck up the juices of already damaged fruit.

Sightings of endangered species like these should also be reported to State conservation authorities to help protect our unique biodiversity.

**STEVE VOGEL**

Caterpillars of the Pink-underwing Moth can suddenly display a face-like appendage when alarmed by predators. Photo © Gary Rosser.

**Q.** *I have found a long, thin, green snake in my home. What is it?*

This is one of the more common species that people encounter in Sydney. It's the Green Tree Snake, *Dendrelaphis punctuata* and, if you don't see the snake itself, you might find its beautiful paper-thin skin on your veranda or in your roof.

Despite its common name, it is often found on the ground in low vegetation as well as in trees, and it comes in yellow and blue, not just green.

It belongs to a group called the colubrids, which have relatively low numbers of species in Australia compared to other groups of snakes. It is venomous to the frogs and lizards it preys upon but is not considered dangerous to humans.

**CHRIS HOSKING**

The Green Tree Snake grows to two metres. Photo © Jodi Rowley.

**Q.** *What is this beastly worm we found in Chichester State Forest (northern NSW)?*

With the help of Museum invertebrate specialist Anna Murray, we found out about terrestrial nemertean or ribbon worms in the genus *Argonemertes* such as this one.

The bright orange tube is its pharynx or throat which it uses to grab and ingest food items. But it can also use it to surprise predators and help it escape when disturbed or threatened. Nemertean or ribbon worms survive in cool, dark and damp habitats such as leaf litter and rotting logs.

**KELLIE HARRIS**

A ribbon worm with its orange pharynx everted. Photo © Elisabeth Burton.

**Opposite**
Dr Joana Zanol on location. Photo © Nelson DuPlat Pinheiro da Silva.

**Top**
The bloodworm, *Marphysa* sp., the fishers' favourite.

**Above and right**
A new species of Australian bloodworm showing the distinctive anterior (head) end and mouthparts. Photos Joana Zanol.

of muddy fieldwork. The worms are found in estuarine creek sediments around Australia where they occur in mucus tubes within the mud. 'We suspect they are mainly opportunistic feeders, eating animals and plant fragments with their well-developed jaws', said Joana.

## GOOD CATCH

Gumboots, bucket and spade aside, Joana and Pat's research toolkit also includes the scanning electron microscope for detecting physical differences between specimens and DNA sequencing for unravelling genetic differences.

After examining samples from a dozen or so sites around Australia, mostly from the southeastern seaboard, Joana seems to have brought home a good catch. 'We collected new data for six species. Four were recorded for the first time here and at least two are new species, bringing the Australian total to 13 species.'

Now back in Brazil, Joana is writing several papers from her work and is keen to see the results picked up and used by the still-experimental bloodworm aquaculture industry. 'To guarantee breeding, you need to be using a single species, but our results show that similar-looking species can have overlapping distributions.

'Now, the bait industry can improve its productivity and perhaps trial different species to see which perform best as bait and which are easier to breed.'

**BRENDAN ATKINS** EDITOR

*Dr Zanol's work in Australia was funded by an Australian Endeavour Research Fellowship.*

# SNAKING TOWARDS YOU

A sidewinding snake leaves distinctive 'J' curves in the sand. Photo Ross Sadlier.

**You might think that snakes have limited options for moving around, but there are at least four ways they can slither and creep.**

As humans, we tend to use the same basic action when we walk. Snakes, however, are free to use their simple limbless bodies in four different ways (though few would use all methods).

Most people know 'serpentine' movement in which the snake's body flexes alternately left and right in muscular waves that start just behind the head and travel through the body towards the tail. The waves push against any irregularity on the ground and propel the serpent, I mean snake, forward.

This mode of locomotion works equally well in water but not on smooth or loose surfaces (such as gravel or sand) where the lack of anything to push against leaves the snake wriggling around in the same spot. That's where concertina movement and sidewinding come in handy.

### CONCERTINA

In concertina movement, the snake progresses in a series of extensions and contractions (hence the concertina reference) using its body as both anchor and grapple. It slides its head end forward to the point at which the weight behind balances the extended body in front.

The snake then arranges its body into a pattern of tight undulations starting just behind the head. These movements effectively increase the weight at the extended head end while decreasing it at the tail end, drawing the body forward.

### SIDEWINDING

Sidewinding is just as effective as concertina movement on loose sandy surfaces but differs markedly in its method, being described as 'throwing loops of the body forward'. Using its body as an anchor, the snake presses several contact areas along its belly against the ground while raising up the areas in between. It then flexes the raised areas sideways in the direction it wishes to travel and presses them to the ground.

The next step is to raise the previous contact areas and move forward to the next contact with the ground. The result is a sometimes-rapid progressive sideways movement used in particular by certain desert snakes.

### SNEAKING

The final method is rectilinear locomotion, used by certain large, heavy, non-Australian snakes to climb or sneak unobtrusively by 'walking' on their ribs and belly scales in an action reminiscent of a millipede's. This form of movement is possible across most surfaces even with a straight body but it is perhaps the slowest slither of all.

Have some fun by trying these methods for yourself – lie on the floor and make like a snake. Which do you like best?

# KAVA

## *'pacific' gift to the world?*

BY ENFORCING A BAN ON THE WIDELY ENJOYED DRINK KAVA, ARE WE THROWING OUT THE BABY WITH THE BATHWATER? ASKS ANTHROPOLOGIST **KIRK HUFFMAN** IN THIS PERSONAL OPINION PIECE.

**Earlier this year, police in Canberra closed down a stall at a major multicultural festival for serving kava to reportedly hundreds of Australian and overseas visitors. Police were acting on a directive issued by the Chief Minister banning kava from the Australian Capital Territory.**

Many Pacific Islanders present at the festival felt hurt, denigrated and marginalised by the police action. They may well have wondered why it had taken three years to enforce what is widely regarded as a poorly conceived ban.

**Right**
*Tānoa* (kava bowl) presented to former Prime Minister Bob Hawke on one of his many official trips to Fiji. This *tānoa* style, and the related way of preparing and presenting kava, began to be widespread in Fiji from around the mid-18th century with increasing influences from Tonga; it has largely replaced more ancient Fijian kava traditions. Photo Finton Mahoney.

**Left**
Members of Sydney's Fijian community prepare kava for a formal *sevusevu* (presentation) at the *Access to Pacific Collections* seminar held at the Australian Museum, November 2009. Photo Finton Mahoney.

## CONSULTATION

Legislation to correct or prevent any suspected dangers to public health is of course only normal and correct. However, in the case of kava, no studies or consultations had been conducted with people of Pacific descent in Australia (estimated at up to 500,000) nor in the Pacific itself until recently.

The medical evidence supporting a ban on kava has been the subject of considerable controversy. The most recent scientific review of the effects of kava drinking, conducted by two scientists from the University of Sydney and published in the journal *Drug and Alcohol Review* in January 2011, found no association of cognitive impairment, liver toxicity or permanent liver damage with kava drinking. The study included all empirical studies of the effects of kava published between 1987 and 2008 reporting health and social outcomes.

Pacific leaders too have questioned the ban on kava, suggesting it may be not so much a health issue as a political and commercial one, perhaps even breaching United Nations charters on global democracy, human rights and the rights of indigenous peoples.

Overwhelmingly, Pacific communities have responded to the ACT ban rationally, forming the Australian Kava Movement, which held its First International Kava Conference at the Australian National University in August 2011. Organised by respected members of the Pacific community in the ACT, the conference featured highly qualified Oceanic speakers from inside and outside Australia discussing the cultural importance of kava. To underscore the significance of the conference, it was graced by the presence of HRH Princess Latufuipeka Mata'aho Tuku'aho of Tonga. Princess Latufuipeka holds the honourable title of *Milolua* (main kava mixer) to King Tupou V, her father.

## USE NOT ABUSE

Of course, any substance (such as alcohol or certain pharmaceuticals) and even foodstuffs (salt and saturated fats) can have proven harmful effects when misused, abused or overconsumed.

But kava, in all its Pacific variations, is essentially about peace, respect and dialogue. It is in this traditional spirit that the Australian Kava Movement submitted its *Guidelines for (an) Educational-Cultural Programme on Kava* to the Federal Government in September 2011.

Will Australian governments continue to legislate against kava, acts that many Pacific islanders consider to be discriminatory? Or will natural kava be allowed once again to be widely enjoyed in multicultural Australia as a natural alternative to the many readily available, proven-harmful, yet legal, substances such as alcohol and certain pharmaceuticals?

**KIRK HUFFMAN,** RESEARCH ASSOCIATE, AUSTRALIAN MUSEUM, HONORARY CURATOR, VANUATU CULTURAL CENTRE, VANUATU AND MEMBER, SCIENTIFIC COMMITTEE, MUSEUM OF TAHITI AND THE ISLANDS, TAHITI, FRENCH POLYNESIA.

**WEBLINK ›**

Join the debate at www.australianmuseum.net.au/blogpost/kava or visit www.australiankavamovement.com.au for updates.

This is part 1 of a series about kava. Part 2 concerns the ethnography of kava and will be published in *Sydney University Museums News* in February 2012.

**Further reading**

**Rychetnik L and Madronio CM, 2011. The health and social effects of drinking water-based infusions of kava: a review of the evidence. *Drug and Alcohol Review* 30(1): 74–83.**

*"While different villages collaborate to develop unique regional styles, the crafts also strengthen and enhance relationships among women"*

While Miss Snell's donation provides opportunities for engaging with the Tongan community, Mrs Porritt's bequest for acquisitions is providing a level of access to this collection that would otherwise not be possible.

**COLLECTORS**

A collection like this illustrates that, while we believe ourselves to be great collectors, in a sense it is the objects that collect us – they embody heritage, tradition and a multitude of memories, and carry with them stories and histories that will far outlast our time.

Miss Snell's donation is a sign of her great affection for Tongan people and the respect with which she holds their material culture. Her collection will continue to teach, share and embody Tongan tradition and history.

**LAURA WILLIAMS,** CULTURAL COLLECTIONS AND COMMUNITY ENGAGEMENT, AND **KATE RICHARDSON,** BEQUEST OFFICER

**WEBLINK ›**

See an interview with Miss Snell at www.australianmuseum.net.au/movie/Interview-with-Muriel-Snell

## MAKING A DIFFERENCE

If you are thinking about making a bequest, or have already made one, please contact Kate Richardson on 9320 6218 or kate.richardson@austmus.gov.au for more information. All enquiries are strictly confidential.

## GIFTS THAT KEEP ON GIVING

### GIFT MEMBERSHIP

Stuck for gift ideas? What better present for your family, friends and neighbours than a gift Membership to Australia's first museum? As a Member you already know the benefits. Why not share the love? Buy online at www.australianmuseum.net.au/members.

### MEMBERS SHOPPING NIGHT

Don't miss our special Members shopping evening on Thursday 1 December from 6–8.30 pm. Enjoy a complimentary drink, mingle with other Members and get a rewarding 20 per cent discount on Shop purchases, for one night only. RSVP, telephone 9320 6225.


Carved face from the Abelam people, Maprik sub-province, East Sepik, representing spirits associated with initiation. See this mask and others in the *Sprit Faces* display (story, page 8).
Photo Carl Bento.
*E61505*


## EXPLORE

Volume 33, Number 4, ISSN 1833-752X

*Explore*, the news and events magazine of the Australian Museum and Australian Museum Members, is published four times per year.





**Editorial committee**
Brendan Atkins (Editor)
Cate Lowe (Photo Editor)
Serena Todd (Members Executive Officer)
Richard Major (Research Branch)
Christine Callen (Marketing Manager)

**Design management** Amanda Teer
**Design and layout** Austen Kaupe, Australian Museum Design Studio
**Production** Jenny Hooker
**Advertising** Brendan Atkins 02 9320 6249
**Printing** Finsbury Green

We welcome your feedback, comments and enquiries. Email the Editor at explore@austmus.gov.au

Frank Howarth's photo by Carl Bento

**Australian Museum**
6 College Street Sydney NSW 2010
Open daily 9.30 am – 5 pm (closed 25 Dec)
t 02 9320 6000 (switch)
t 02 9320 6225 (Members)
www.australianmuseum.net.au

**President** Sam Mostyn
**Director** Frank Howarth
**Members Executive Officer** Serena Todd

**Environmental responsibility**
*Explore* is produced using carbon-neutral processes under an ISO 14001 environmental management system. It is printed on ecoStar, a carbon-neutral paper made from 100% post-consumer recycled waste, using alcohol-free, vegetable-based inks made from renewable sources.

RECYCLED
Paper made from recycled material
FSC™ C102126
www.fsc.org

printed carbon neutral
1,383kg $CO_2$ saved on this project


**Connect with us online**

**Australian Museum website**
www.australianmuseum.net.au

**Facebook**
www.facebook.com/australianmuseum

**Twitter**
www.twitter.com/austmus

**YouTube**
www.youtube.com/austmus

# MAKE A DIFFERENCE!

*The Australian Museum strives to inspire the exploration of nature and cultures. We would like to acknowledge the benefactors and corporate partners who support us in achieving this vision.*

Australian museum
nature culture **discover**

**These generous individuals contribute to scientific research, education and public programs, and assist in the acquisition of items that enrich the Museum's collections. We would especially like to acknowledge those who generously leave a gift to the Australian Museum in their will – a lasting way to benefit generations to come.**

Find out how your support can make a difference to the important work of the Australian Museum. Contact the Development Branch on **02 9320 6216** or **development@austmus.gov.au.** Donations to the Australian Museum and its Foundation are tax deductible.

NSW GOVERNMENT

**PRINCIPAL PARTNERS**
Australian Museum Members
BJ Ball Papers
City of Sydney
Geddes Group
IBM
JCDecaux
Lizard Island Reef Research Foundation
National Geographic Channel
Rio Tinto
Scitech
Sydney Grammar School
*Sydney's Child*
*The Sydney Morning Herald*

**GIFTS TO COLLECTIONS**
Steven and Janine Avery
Ursula Burgoyne
Louise and Sam Dawson
Rod and Robyn Dent
in honour of Pat Dent and the Wanindilyaugwa tribe
John L Gordon
Mark Hanlon
Mrs J Holliday
The Late John Hume
John Rankin
George and Edna Oakes
Paul Scully-Power
Trevor Shearston
Muriel Snell

**AUSTRALIAN MUSEUM FOUNDATION**

**President's Circle**
Dr Zeny Edwards
Christopher Grubb
Ian and Stephanie Hardy
Mrs Judy Lee
Diccon Loxton
Helen Molesworth
Rob and Helen Rich
David and Daniela Shannon
The Sherman Foundation

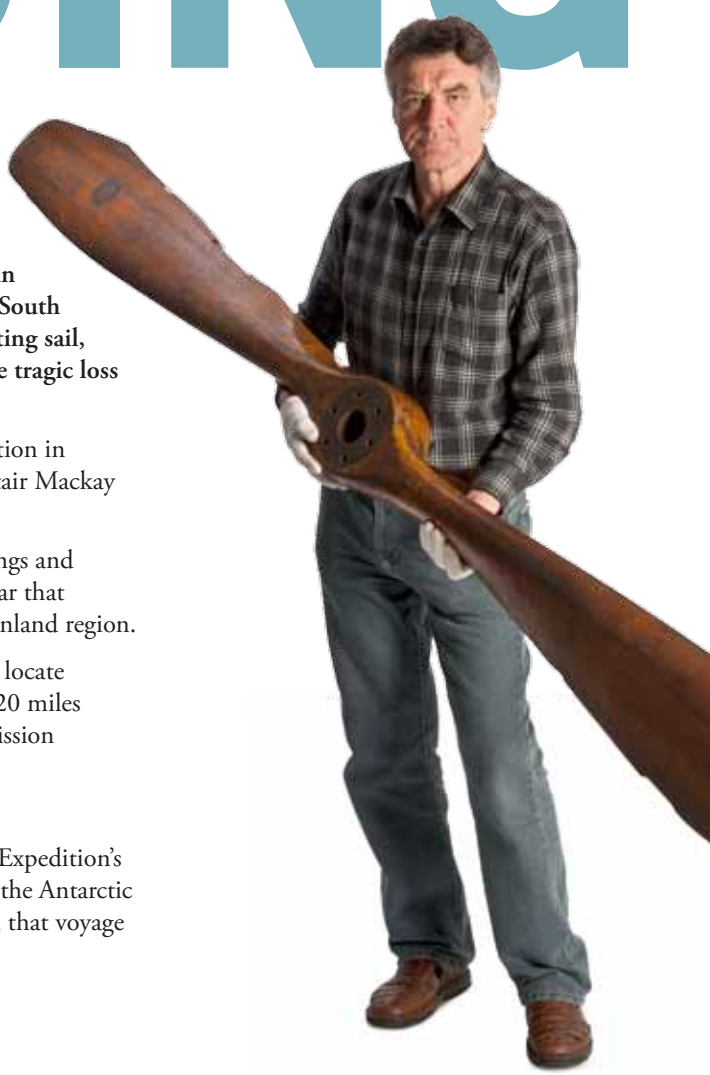
**Supporters**
Antoinette Albert
James and Belinda Allen
Michelle Atkinson
Mr and Mrs KR Bell
Jane Beniac
Sir Ron Brierley
Alan Cameron
Elizabeth Cameron
Peter and Rose Cassidy
Ken Coles AM and Rowena Danziger AM
P Cornwell
Debra Cox
Patrick and Ailsa Crammond
John Dickinson
Hugh Dixson
Suellen and Ron Enestrom
Estate of the late Clarence E Chadwick
Estate of the late Patricia M Porritt
Estate of the late Merrill Pye
Estate of the late Gwendoline A West
Leon Gorr
David Greatorex AO and Dee Greatorex
Owen Griffiths & Biodiversity Conservation Madagascar Assn
Ken Handley AO and Diana Handley
Ronnie Harding
Bill and Alison Hayward
Ann Hoban
John and Mary Holt
Dan Howard SC and Dr Rosemary Howard
Frank Howarth
Gilles Kryger
John Lamble Foundation
James E Layt AM
Margaret Mashford
Robert McDougall
Mabs Melville
Tempe Merewether OAM
Stephanie Miller and Martin Pool
Dame Elisabeth Murdoch AC DBE
John Neuhaus
Justice Henric Nicholas
The Noonan Family
David Norman
Alice Arnott Oppen OAM
Andrew Pardoe
John Pearson
Loris Peggie
Adrian and Dairneen Pilton
David Robb
Jane and Neville Rowden
Reid Family
Rosemary Swift
Senta Taft-Hendry
Vera Vargassoff
Tony White AM and Doffy White
Jennifer Wright

## CONTENTS

EXACTLY ONE HUNDRED YEARS AGO, IN DECEMBER 1911, THE AUSTRALASIAN ANTARCTIC EXPEDITION SET SAIL FROM HOBART AND INTO THE HISTORY BOOKS, SAYS **COLIN MACGREGOR**.

# *the australasian antarctic expedition 1911–14*

# HEADING



**It was just as well that geologist Douglas Mawson had turned down Captain Robert Scott's offer to join the ill-fated British Antarctic Expedition to the South Pole in 1910. By the time Mawson's own expedition on the *Aurora* was setting sail, Scott was in the final weeks of the 18-month expedition that resulted in the tragic loss of several lives, including his own.**

Mawson had been a member of Ernest Shackleton's British Antarctic Expedition in 1907–09. In 1908 Shackleton assigned Mawson, Edgeworth David and Alistair Mackay the task of being the first people to reach the magnetic South Pole.

The pole's estimated position had been charted in the 1840s using star sightings and compass readings, but in 1901, on Captain Scott's first expedition, it was clear that it had moved considerably in 60 years and by 1908 was located in a remote inland region.

Mawson used a dip needle – a magnetic needle that can rotate vertically – to locate the pole's exact position. He discovered that the pole was moving in a circle 20 miles (32 kilometres) in diameter every 24 hours, and the team completed their mission at the centre point of its daily rotation.

## TECHNOLOGIES OLD AND NEW

Some three years after the Shackleton expedition, the Australasian Antarctic Expedition's goals were strictly scientific: to explore the geography, geology and biology of the Antarctic region due south of Australia. The Museum's small collection of objects from that voyage are a reminder of the enormous challenges faced by these scientific pioneers.

**Left**
The sledgemeter kept track of distance travelled and was essential for plotting progress.

**WEBLINK ›**

See these and more Mawson artefacts at www.australianmusuem.net.au/explore-magazine.

### SLEDGEMETER

The second crucial piece of information to be calculated on longer journeys was the distance travelled. Vital for estimating progress and planning food supplies for the return journey, a sledgemeter – a wheel fitted to the sledge and connected to small brass dials and gears – clocked up the miles travelled.

The importance placed on this piece of equipment is illustrated by Mawson's efforts to repair a broken axle-bearing on his sledgemeter. It had broken during his legendary solo return trip of the tragic Far Eastern Sledging Party.

This expedition had seen the death of his companion Belgrave Ninnis, who was swallowed by a crevasse along with his sledge and dogs. Losing their tent and most food supplies in the accident, Mawson and Xavier Mertz turned back to the base camp, but Mertz succumbed to malnutrition and illness on the return trip. Mawson finally reached Cape Dennison alone – just hours after the *Aurora* had departed, resulting in an unplanned second winter at the base with the small party who had remained behind to await his return.

Putting this extra time to good use, the Australasian Antarctic Expedition finally explored more than 3000 kilometres of Antarctic coastline, collecting valuable scientific data and specimens representing the region's geology, biology, geomagnetism, oceanography and meteorology – and staking Australia's claim as custodians of this great southern wilderness.

**COLIN MACGREGOR** MANAGER, MATERIALS CONSERVATION

## LOST YOUR COMPASS?

Have you ever wondered why Earth has a magnetic field? The short story is that the magnetic field originates from Earth's molten iron core. It is the electric currents circulating in the core that produce the magnetic field.

To picture this field, just imagine a giant bar magnet (dipole) at Earth's centre, tilted at about 11 degrees from Earth's rotational axis. If this imaginary magnet were extended north and south it would intersect the surface to give the magnetic North and South poles. But these are not the same as the geographical poles, where Earth's rotational axis emerges.

To complicate matters, the magnetic poles are in motion, though the rate of movement is not constant. The magnetic North Pole is currently off the west coast of Ellesmere Island in northern Canada and is moving towards Russia at about 40 kilometres per year (it was 10 kilometres per year throughout much of the twentieth century). The magnetic South Pole is currently in the Southern Ocean just off the coast of Adelie Land and is moving north-west at about 5 kilometres per year.

**ROSS POGSON** COLLECTION MANAGER, MINERALOGY

**Right**
Mawson used this ice pick to haul his way out of the crevasses that would often appear beneath the thin covering ice.
Photos Stuart Humphreys.

**Further Reading**

**Douglas Mawson, 1915. *Home of the blizzard: the story of the Australasian Antarctic Expedition, 1911–1914.* William Heinneman, London.**

**Beau Riffenburgh, 2004. *Nimrod: Ernest Shackleton and the extraordinary story of the 1907–1909 British Antarctic Expedition*. Bloomsbury, New York.**

# ONE ROAD *one country*

**Traversing 1850 kilometres of desert country in Western Australia, the Canning Stock Route was mapped by government surveyor Alfred Canning in 1906.**

The road was intended to bring cattle from the rich Kimberley in the north to Wiluna in the south, meeting the demand for beef on the Western Australian goldfields and in the capital, Perth. But it also brought conflict, death and desecration to Aboriginal people, their Country and their communities.

## SCATTERED

'When I was growing up there was a road there, but there was a story behind it that we didn't know … only the old people know the story of the stock route.'

Hayley Atkins, 29, is a Putijarra woman from Jigalong, some 1000 kilometres north-east of Perth. She lives in the town of Newman where she works with Martumili Artists, one of nine Aboriginal art collectives represented in the exhibition *Yiwarra Kuju: the Canning Stock Route*.

'Before the road, life was normal', Haley said. 'There were different kinds of tribes but they're all connected to the land, connected as family.

'When white people came, it was not just empty land, it was our homes. The road was cutting through, not just the waterholes, but also Country, destroying homes. 'People scattered east and north and west. There was killing, and digging the wells destroyed the waterholes.'

## BACK TO COUNTRY

One hundred years after Canning completed his task, an independent cultural organisation, FORM, set about exploring the connections between Aboriginal communities and the stock route. Project organisers invited artists from nine art communities to join a 'Back to Country' travelling celebration of culture and storytelling. The Aboriginal name *Yiwarra Kuju* means 'one road'.

Hayley became involved with the project in 2007 as its first Aboriginal co-curator, eventually picking up a brush to collaborate with her grandmother, Pukarlyi Milly Kelly, on one of the paintings in the collection. 'We organised for people to meet at Well 33. People flew in from different places: the Northern Territory, Kimberley and Western Desert', said Hayley.

'People stayed, camped out, doing art and telling stories … we went all the way to Billiluna, people coming and going.'

These bush workshops resulted in a significant collection of contemporary Aboriginal art acquired by the National Museum of Australia.

## LEGACY

But perhaps the real legacy of the project will be the bringing together of people to discover forgotten family ties, to remake connections to Country and to tell their stories. 'The project identified family, connected Country. That was in 2007, but people are still getting together and telling stories.'

Hayley began to find out about her own family ties to artists from many other Western Desert art centres. 'I didn't know my family were bush people 'til I did that painting with Milly. I'm just glad to know where my grandmother and grandfather are from.'

And Hayley's message for visitors to the exhibition? 'To understand about Aboriginal culture and art, don't just look at the paintings – really hear the story behind the paintings …'

With more than 90 artworks, interactives and artists' voices in the exhibition, this is a Museum experience not to be missed.

**BRENDAN ATKINS** EDITOR

*Yiwarra Kuju: the Canning Stock Route* is showing at the Australian Museum from 17 December 2011. The exhibition was developed by the National Museum of Australia in partnership with FORM and is supported by the National Collecting Institutions Touring and Outreach Program, an Australian Government program aiming to improve access to the national collections for all Australians.

**Left**
*Puntawarri* 2007 by Pukarlyi Milly Kelly and Hayley Atkins, Martumili Artists, acrylic on linen, 125 x 79.5 cm.

**Right**
Co-curator Hayley Atkins surveys the paintings at the end of the bush trip on the shores of Nyarna (Lake Stretch). Photo © Tim Acker, 2007.

# *beyond the mask*
# SPIRIT FACES

THE DEVELOPMENT OF MODERN ART OWES MUCH TO THE 'DISCOVERY' OF TRIBAL ART BY HENRI MATISSE AND PABLO PICASSO IN THE EARLY TWENTIETH CENTURY, WRITES THE MUSEUM'S **YVONNE CARRILLO-HUFFMAN**.

**Paris, 1906, and artist Henri Matisse is walking down the Rue de Rennes. He pauses in front of a display of so-called primitive artefacts in a curio shop. Mesmerised, he can only marvel at the facial expressions and striking forms of the masks and sculptures from Africa and Oceania as they resonate with images of ancient Egypt and other stylised artforms in his artist's mind.**

Matisse was the first modern Western artist to fall under the spell of tribal African art and was soon joined by his colleagues Pablo Picasso and André Derain in exploring what became known as Primitive art – a seminal movement in the history and development of twentieth-century Western art.

### PRIMITIVISM OR ART?

The term 'primitivism' was first used in France in the late nineteenth century to describe a series of non-Western arts, and was formally defined as an art-historical term in the encyclopaedic *Nouveau Larousse Illustré*, published in Paris between 1897 and 1904.

Ethnographic museums in the later nineteenth century collected and preserved all manner of curios, masks, figures and other indigenous material but made no distinction between art and artefact. They categorised as 'primitive' any indigenous cultures and art from Africa, Oceania and the Americas outside the parameters of the Beaux-Arts (the 'beautiful arts', meaning European classic art). Primitivism also mirrored the prevailing Social Darwinian theories that placed non-Westerners at the base of the cultural evolutionary tree.

By contrast, modern European artists of the early twentieth century responded to primitive art primarily as an expression of imagination and invention. Matisse, Picasso and Derain admired the abstract qualities found in indigenous artefacts and formed a deep fascination, and respect, for non-Western artistic pictorial forms that would influence their own artworks.

Picasso's first encounter with an ethnographic display of African and Oceanic artefacts, at the Ethnographic

*"Masks possess a rich symbolism and psychology that resonates throughout history and cultures"*

**Top**
*Nalawan* (sacred knowledge society) ceremony at Southwest Bay, Malakula Island, north-central Vanuatu in August 1983. One of the headdress masks being worn here (shown left) is on display in the *Spirit Faces* exhibition. Photo K Huffman, courtesy Vanuatu Cultural Centre.

**Bottom**
Overmodelled headdress mask from Southwest Bay, Malakula, Vanuatu, used in the ceremony (top left). Often such masks are destroyed after use, but this one was repainted for re-use in a later ritual before being obtained by the Museum (shown being prepared for display by Museum conservator Sheldon Teare). Photo Carl Bento.

# *oceans*
# THE LITMUS TEST

*"…it would take tens of thousands of years for ocean chemistry to return to pre-industrial conditions"*

The degradation of reefs is affecting more than just the corals and the numerous species which depend on reefs: it may also directly affect our economy. Reefs not only protect long stretches of coastline and beaches from the full force of the oceans; they are also the basis for tourism and fishing industries – worth $5.4 billion annually and employing 63,000 people in the Great Barrier Reef alone.

## UNKNOWNS

Research on oceanic acidification is in its infancy and scientists cannot be conclusive about its effects on complex marine ecosystems and food webs. Many scientific findings have arisen from dose–response laboratory experiments on isolated species. How these relate to entire ecosystems is complex.

But, as the urgency and deleterious potential of ocean acidity is being recognised, governments are mobilising. For example the European Project on Ocean Acidification, begun in 2008, is studying the effects of acidity on living systems from cells to ecosystems.

National research programs on acidity are being funded on most continents including Australia. Even with research support, isolating the field effects of acidity is complicated by confounding and interacting factors such as global warming and changes in nutrient levels and dissolved oxygen. Such questions are starting to be addressed through the use of large, floating experimental chambers (called mesocosms) exposed to varying levels of $CO_2$, but many important questions remain.

## ADAPTATION

Can species adapt to increasing acidity? Unfortunately, the fossil record shows many species became extinct about 55 million years ago when seawater acidity reached levels similar to those predicted by scientists for the end of this century. Acidification now is progressing 10 times faster than then, so it seems unlikely that today's calcifying species could adapt quickly enough to survive.

Scientists are also asking whether one species' loss is another's gain. Can one species be simply substituted by another, more resistant, species to maintain the essential functioning of ecosystems? Losses of the coccolithophorid phytoplankton, mentioned earlier, might be balanced by non-calcifying phytoplankton which, in the presence of increased $CO_2$, could thrive, perhaps absorbing excess $CO_2$ and minimising acidification. Similarly, some species benefit from acidification; it appears that seagrasses in acidified water grow three to four times more shoots and roots than in normal conditions.

## RISK

Despite these uncertainties, scientists have produced plausible scenarios, supported by theory and measurement, that have serious implications for future human generations and their life support systems.

Governments would therefore be prudent to rate the acidification issue as both urgent and important. Any risk analysis of the projected rate of acidification and its effects would indicate that action is needed.

But what can be done? While ocean acidification itself appears to be a fait accompli, the projected impacts are less certain. They present a challenge to shape the future using the same human ingenuity that ushered in the Anthropocene in the first place.

But fundamental change is needed, including an attack on the root cause of acidification – the rate at which $CO_2$ concentration is increasing in the atmosphere. Many countries are now starting this politically difficult process as part of programs to limit the effects of global warming.

We need to use economic instruments to not only limit carbon emissions, but to develop green technologies and conserve energy. We need to accept that economic and population growth in a finite world is ultimately not sustainable.

We also need a better understanding of the effects of acidification. Such knowledge will help us to make choices directed towards achieving a high quality of human life and the protection of nature.

As the World Resources Institute stated in 2000, the challenge for the 21st century is to understand the vulnerabilities and resilience of ecosystems so that we can find ways to reconcile the demands of human development with the tolerances of nature.

This requires wisdom as well as knowledge – the communal wisdom to act and, as one wise man once said, to restore harmonious relations among elements of the world.

The capacity for wisdom is, after all, a human trait that our Latin name, *Homo sapiens*, embodies. Can we pass the acid test?

**DR ALAN JONES** SENIOR RESEARCH FELLOW

**WEBLINK ›**

Share your comments at www.australianmusuem.net.au/blogpost/Oceans-the-litmus-test.

**Further reading**

**Byrne, M, 2011. Impact of ocean warming and ocean acidification on marine invertebrate life history stages. *Oceanography and Marine Biology – An Annual Review* 49:1–42.**

**Pandolfi, JM, SR Connell, DJ Marshall and AL Cohen, 2011. Projecting coral reef futures under global warming and ocean acidification. *Science* 333:418–22.**

**Schiermeier, Q, 2011. Earth's acid test. *Nature* 471:154–6.**

AUSTRALIA'S TOP FISHING BAIT, BLOODWORMS, CAME UNDER SCRUTINY THIS YEAR AS VISITING SCIENTIST **DR JOANA ZANOL** SET OUT TO DISCOVER JUST HOW MANY SPECIES WE HAVE.

# BLOODWORMS *yield results*

**Brazilian marine biologist Joana Zanol visited Australia earlier this year to search for new species of bloodworm (segmented seaworms or bristleworms in the phylum Polychaeta). 'Since 1815, when the original specimen of *Marphysa sanguinea* was first described in England, bloodworms have just tended to be lumped together under this name within the family Eunicidae', Joana said.**

'But with 60 or so species known worldwide and two new species described in Australia since 2003, it seems there is much more work to discover about this commercially important group.'

## BAIT

Bloodworms are highly regarded as fishing bait. Ask any fisher and you'll hear comments like: 'Our catches doubled and the fish were the larger variety'; 'Each worm pretty much guarantees you a fish'; 'Compared to beach worms they work just as well if not better'.

They are so good that the worms, which can reach 60 centimetres, support a lucrative, multimillion-dollar industry supplying fishing bait to recreational fishers.

Joana's research partner at the Museum is Dr Pat Hutchings. 'The problem is that, like so many groups of animals and plants, we don't really know how much diversity there is', Pat said.

'Knowing what we have is essential for managing natural populations sustainably and establishing a potentially profitable aquaculture industry.'

To find answers, Joana and Pat had to start digging – literally, with plenty

**MARTYN ROBINSON**
IS THE MUSEUM'S
RESIDENT NATURALIST

# WHY THE LONG FACE?

**Top**
The Balsam Beast, *Anthophiloptera dryas*, is an unusual flower-feeding katydid found in Sydney suburbs. Photo Stuart Humphreys.

**Bottom**
The Honey Possum, *Tarsipes rostratus*, is the only terrestrial mammal to feed exclusively on nectar and pollen. Photo B&B Wells.

**With the warmer weather and the abundance of flowers about, those of you with keen eyes might notice some of our more unusual flower visitors.**

Australia has perhaps the greatest diversity in the world of animals that rely directly on flowers. Is it because of the diversity of the flower families themselves? Or is it the extremes in climate, from deserts to lush rainforests, that create such diversity?

Take bees: we have more than a thousand species of native bee, including the world's smallest, *Quasihesma* sp., measuring less than 2 millimetres, and some comparative giants reaching 25 millimetres or more. We have nectar- and pollen-feeding beetles in abundance, from the tiny to the thumb-sized. Then there are sugar-bag ants, the ultimate bush-tucker sweet treat.

And it's not just insects of course. There's a whole family of birds – the honeyeaters – and some parrots, like the lorikeet, that rely on flowers for food.

Among the mammals, Australia has three species of megachiropterans (large fruit bats) that specialise in nectar and pollen, and another four that rely on flowers for a major part of their diet. There is also the tiny Honey Possum, *Tarsipes rostratus*, of Western Australia – the only terrestrial mammal anywhere to feed exclusively on nectar and pollen – and a host of other small mammals that enjoy nectar as part of a balanced diet.

But the flower-feeders that surprised me most are a group of katydids (grasshoppers) in the sub-family Zaprochilinae, having four genera and about 17 species.

These don't look much like grasshoppers, resembling instead a strange kind of stick- or leaf-shaped insect. Nor do they often hop (though they can if needed).

They are not the kind of grasshopper to eat your roses, but feed instead on nectar and pollen, just like bees and butterflies, and probably pollinate their hosts as they go. Their elongated face allows them to insert their heads deep into the flowers to reach the nectar and pollen. The largest species is the Balsam Beast, *Anthophiloptera dryas*, discovered in the 1980s in Sydney's northern suburbs by naturalist Densey Cline. Its scientific name translates romantically as the 'winged flower-loving forest nymph'.

Finally the largest and most numerous flower-feeder of all is … us. Think of that next time you put a spoonful of honey in your tea or eat your broccoli and cauliflower. The gourmets among us will also cook zucchini flowers on the barbeque, throw a few nasturtium flowers into a summer salad or sprinkle pollen granules (from health shops) onto their muesli.

So next time you look at a summer display of flowering trees, shrubs or herbs, maybe you'll also see a smorgasbord that fuels the activities of many species and is responsible for kick-starting a number of diverse evolutionary pathways.

**WEBLINK ›**
www.australianmuseum.net.au/Balsam-Beast

# *where have all the* CHRISTMAS BEETLES GONE?

**Left**
Female Washerwoman, *Anoplognathus porosus*, length 20 mm.

**Right**
Male King Beetle, *Anoplognathus viridiaeneus*, length 30 mm.
Photos Max Beatson.

IT'S THAT TIME OF YEAR WHEN RETAILERS BEMOAN THE FICKLE HABITS OF CONSUMERS, PEOPLE CLEAN OUT THEIR BARBEQUES AND CHRISTMAS BEETLES CRASH INTO WINDOWS AND PILE UP AROUND STREETLIGHTS … OR DO THEY? ENTOMOLOGIST **CHRIS REID** INVESTIGATES.

**Each year I am asked, 'Where have all the Christmas beetles gone?' Have they really declined … and what is a Christmas beetle anyway?**

## SCARABS

Christmas beetles are a type of scarab (a group that includes dung beetles and chafers). Compared to other scarabs, Christmas beetles (genus *Anoplognathus*) are large and chunky, somewhat flattened in shape and with metallic brown, yellow or pink colours.

They most obviously make themselves known in midsummer by swarming around lights in towns throughout eastern Australia.

The adults generally feed on eucalyptus leaves. They prefer open woodland to forest and thrive in pastures wherever trees have been left in place. In farmland they can form dense masses on the remaining eucalypts, chomping through leaves, sometimes killing their hosts. In contrast to the adults, the larvae (grubs) feed on roots, usually of grasses.

Some species are economically important pests of eucalytpus plantations while others are implicated in dieback – the decline of mature trees in landscapes like those in NSW's New England Tableland.

## DIVERSITY

There are 36 species in the genus with all but one unique (endemic) to Australia and 21 species found in New South Wales. At least 10 species occur in the Sydney region – more if the Blue Mountains are included.

Because they are such a feature of the eastern Australian experience some common species have been given English names, such as the Washerwoman and (rarer) King Beetle.

Distinguishing some species can be tricky, but it helps to examine the hairs on their 'bums' (posterior). (This is something of an in-joke among entomologists but it actually works for this group!)

## DECLINE?

The evidence suggesting the decline is anecdotal yet compelling. In the 1920s, they were reported to drown in huge numbers in Sydney Harbour, with tree branches bending into the water under the sheer weight of the massed beetles. You won't see that these days, and I've never seen a Christmas beetle come to light where I work, next to Hyde Park.

While public concerns suggest that numbers are also much smaller in the suburbs, I've found at least five species near my home, clustered around street lights at the southern edge of Royal National Park, 55 kilometres south of Sydney.

## PLAIN ANSWERS

If we accept that Christmas beetles have declined in central Sydney, the next question is 'why?'

The dual life history provides a clue. The adults need eucalypt leaves, and the larvae need the roots of grasses, presumably native grasses. An important habitat for them, the Cumberland Plain woodland, was once widespread in Western Sydney but less than 10% remains. Sydney is now bulging at the seams with 4.5 million people, and Western Sydney has absorbed much of the growth. The beetles' former habitat is now a brick, concrete and tarmac jungle.

Christmas just isn't what it used to be, is it?

**CHRIS REID** PRINCIPAL RESEARCH SCIENTIST

**WEBLINK ›**

For a fully illustrated key to the Christmas beetles of New South Wales, go to keys.australianmuseum.net.au.

### WHAT IS KAVA?

Kava is a draught made from the water-filtered, skinned and prepared roots of the Kava plant, *Piper methysticum*. The domesticated, drinkable variety of the plant is naturally found only in the Pacific where it has been widely distributed and cultivated in traditional societies.

Often mistakenly called by outsiders the Pacific alcohol, beer or brew – or even 'Pacific mud' – it contains neither alcohol nor mud, nor is it brewed. The plant has been used ritually and medicinally for many centuries in the Pacific – possibly from before the founding of any of the current European nations!

Many Oceanic cultures, from parts of Melanesia to eastern parts of French Polynesia – an area covering nearly a third of Earth's surface – have, or had, kava drinking as a respected, highly ritualised and important part of their cultures.

### RITUAL AND MEDICINE

Used ritually and socially, kava-drinking leads to feelings of warmth, relaxation, contemplation, peace and contentment. This is one of the reasons why it spread centuries ago across Oceania and why its use has become a highly ritualised and essential part of ceremonies for welcoming, respect, farewell and peace-making.

Medicinally, kava is an effective natural reliever of anxiety, stress and tension, both mental and physical, and has long been used in traditional cultures to treat many ailments. Its medicinal properties were recognised by German scientists as early as 1860 and, from 1890, kava-based medicines were being sold in Germany and other parts of Europe. In one year alone (1908), more than 34 tonnes of kava root was exported from (then) German Samoa for use in pharmaceutical preparations.

It remained a popular alternative medicine in Europe through the twentieth century, resurging in the 1980s and 90s. To meet demand, Fiji, Samoa, Tonga – and later Vanuatu – became major exporters of this 'pacific', mood-levelling root. Export sales became a major positive element in government economies and rural islander incomes.

### DENIGRATED AND DEMONISED

Despite early recognition of its benefits by the Germans, kava was denigrated and demonised, initially by missionaries who linked its use to 'heathenism', and later by colonial governments because it was thought to be unhygienic and out of step with respect for colonial authority.

To tighten their grip, French administrators banned its use in French Polynesia from 1927. In other parts of the Pacific, some churches would (and still do) excommunicate converts found to be using it.

But kava and its cultures are eminently adaptable. In Tonga, where kava is part of the traditional chiefly/royalty respect system, its use has been integrated into Christianity. In Fiji, its traditional ritual use has been maintained and expanded to become readily available. On Tanna, in Vanuatu, kava became a symbol of resistance to missionisation and colonisation, and the nation's capital, Port Vila, is the only Pacific capital where the incidence of alcohol drinking has decreased in recent decades to be largely replaced by kava drinking.

### RUMBLINGS

Its pacifying and healthful properties prompted two Fijian Methodist missionaries to introduce kava to certain Aboriginal groups in the Northern Territory in the early 1980s in the hope of halting the horrific ravages of alcohol there by providing a harmless substitute. At first it was successful and alcohol sales to some communities plummeted. But by the mid-1980s, some medical workers reported evidence of liver damage in some individuals, and kava was blamed.

Elsewhere the use of kava tablets continued unabated until, in November 2001, the German government announced it had received reports of a number of cases of liver damage (and one death) possibly related to the intake of kava extract or tablets.

*"Kava, in all its Pacific variations, is essentially about peace, respect and dialogue"*

### PUZZLE

Pacific kava drinkers were puzzled. There is no history of liver damage from kava in Oceania, and many were convinced that if there were any problems they were with the modern tablet extraction or production processes, or the abuse of kava with alcohol.

Sales of kava extract in Germany were permitted until an official ban was announced in mid-June 2002. Not to be beaten, the French government had announced a complete ban on kava products in mid-January 2002 (despite only months earlier lifting the 1927 ban they had imposed |in French Polynesia).

And in Australia, kava in tablet form was declared a 'prescription only' medicine in 2004, extended in 2008 to include traditional water-prepared kava. The government banned the commercial importation of kava in 2007.

# *balancing* ACT

**This little monkey certainly looks content being out on a limb; however, I find the goat's predicament quite disturbing.**

The *Wildlife Photographer of the Year 2011* exhibition is full of animal antics and fantastically beautiful images of nature. Catch animals in the act … of living!

**CATE LOWE** PHOTO EDITOR

## WILDLIFE PHOTOGRAPHER OF THE YEAR 2011

This world's most prestigious wildlife photography exhibition returns this summer with 108 stunning images on display. Celebrate the beauty, magnificence and fragility of our world.

**Exhibition open 10 December 2011 to 18 March 2012**

Exhibition co-owned by Natural History Museum and BBC *Wildlife Magazine*
Exhibition patron National Geographic Channel
Exhibition sponsor JCDecaux
Major sponsor *The Sydney Morning Herald*

**Left**
*Tiny warm-up*.
Photo © Cyril Ruoso (France).
Folded up into a fur-ball, this youngster is warming its extremities in between bouts of play and feeding. He is part of a band of about 70 or so Qinling Golden Snub-nosed Monkeys living high up in China's Qinling Mountains, surviving on lichen, leaves, bark and buds.

**Right**
*Balancing act*.
Photo © Joel Sartore (USA).
In a death-defying manoeuvre, a female mountain goat stretches to reach a mineral lick. Slowly and methodically, she balances on all four feet on a single, tiny ledge and then pushes out with her front legs to wedge herself into a crevice with hooves spread for maximum grip.

# *teaching* TONGAN TRADITIONS

IS THERE A SENSE IN WHICH OBJECTS COLLECT PEOPLE? TECHNICAL OFFICER **LAURA WILLIAMS** AND BEQUEST OFFICER **KATE RICHARDSON** EXPLAIN.

**Above**
Miss Muriel Snell (right) discusses her years in Tonga with 'Eseta 'Aholelei.

**Opposite**
Clockwise from top: a traditional basket (*kato*); a purse of European influence photographed with Miss Snell's postcards and a signed quarterly donation ticket to the Wesleyan Church of which she was once a confirmed member; a waist belt (*kiekie*) traditionally worn by women. Photos Laura Williams.

**On walking into a living room bursting with the colours and patterns of the Kingdom of Tonga one might wonder why its owner, Miss Muriel Snell, would want to shed such beautiful memories.**

A few weeks earlier Miss Snell had contacted the Museum from her Blue Mountains home to enquire about donating 'a few Tongan items'. Dion Peita, the Museum's Cultural Collections Coordinator, was astonished to find that these items numbered more than 200, increasing the size of the Museum's Tongan collection by 40 per cent and adding to its significance.

'Before Miss Snell's donation, the Museum had only limited examples of traditional Tongan crafts', Dion said.

'The donated items provide the Museum with a vibrant illustration of cultural exchanges from mid-twentieth century Tonga, a period marked by growing tourism and trade.'

## FAMILY

Miss Snell moved to Tonga in 1958 to teach at a Methodist school in the village of Pangai. During her six years in the village she grew particularly close to the community and was, she says, 'treated as family'.

'Every afternoon, young girls were taught crafts that took a long time and great amount of skill', she said.

'The crafts were then sold as tourist items to support the school.'

The craft afternoons were an essential part of Tongan school life and it is through these close and unforgettable relationships that she received many of her treasured objects.

## REVITALISATION

These are practices that continue in Tonga today, where a flourishing basket industry remains a fundamental part of many social and economic relationships, says 'Eseta 'Aholelei, a Tongan community representative. 'Eseta has been working with Museum staff to document the items in Miss Snell's collection.

'While different villages collaborate to develop unique regional styles, the crafts also strengthen and enhance relationships among women and their communities', said 'Eseta.

'It's the women who gather to weave, teach and continue these long-held traditions.'

Workshops are planned to bring artists and community members together to learn about traditional techniques of weaving, making bark cloth, and other cultural practices.

The Museum owes a debt of gratitude not only to Miss Snell, but to the generosity of another Museum benefactor, Mrs Patricia Porritt, whose bequest has funded the cost of transporting and accessing this extensive collection.

It has also provided for the research and documentation of the items, to re-establish their provenance and record the stories and intangible heritage associated with them.

**On behalf of everyone here, a big thank you for your ongoing support for the Museum through your Membership.**

### THE YEAR IN REVIEW

It's been an exciting year, full of fun and informative events. We've heard from experts such as Ian Fraser, Tim Flannery and Jason Edwards; let our hair down at Jurassic Lounge; welcomed families to spend a night at the Museum; and taken numerous walks and tours to investigate the cultures of Sydney.

Members have also toured the world, travelling to Mexico and Madagascar this year.

### BETTER SPACES

The Museum is expanding its ground floor temporary exhibition spaces so we can host larger world-class exhibitions. The first will be *Yiwarra Kuju, the Canning Stock Route* (story page 6), a beautiful and moving exhibition of Indigenous art, opening 17 December.

We are also installing new display cases on the ground floor to house smaller exhibitions. *Spirit Faces* an exhibition of ceremonial masks drawn from our own collection (story page 8), is the first of these, opening 11 February. And back by popular demand will be the perennial favourite *Wildlife Photographer of the Year*, opening on Level 2 on 10 December.

Until next time, we wish you a safe summer and enjoyable new year.

**SERENA TODD**
Executive Officer – Members

Photo Carl Bento.

# TRAVEL *with members*

### MADAGASCAR, ISLE OF BIODIVERSITY

**Experience the world's most diverse environments with Australian Museum Members.**

Adrift from the African coast, Madagascar has evolved over millions of years in isolation. The result is a country like no other, a strange and incongruous mix of wildlife and cultures. Significant rewards await the traveller with an unparalleled array of plants and animals found nowhere else, including the entire primate family of lemurs, all contained within an extraordinary range of habitats. Combined with a unique human presence, Madagascar is a destination full of intrigue and excitement.

We are pleased to announce the appointment of Dr Steven Goodman as leader of our 2012 program. Resident in Madagascar since 1989 and a recognised expert in Malagasy biodiversity, Dr Goodman is one of Madagascar's finest field biologists. Credited with discovering many new species, he is a staff member of the Field Museum of Natural History of Chicago and, when not on field expeditions, is based at the University of Antananarivo. He is a founder of the Vahatra Association, a leading centre of scientific research in Madagascar.

Join Members from 15 May to 8 June 2012 on this tour to a place like no other.

Coquerel's Sifaka, *Propithecus coquereli*, is a vegetarian lemur found in the lowland forests of northern Madagascar. Photo © Ray Boniface.

# MAKE A DIFFERENCE!

*The Australian Museum strives to inspire the exploration of nature and cultures. We would like to acknowledge the benefactors and corporate partners who support us in achieving this vision.*

Australian museum
nature culture **discover**

**These generous individuals contribute to scientific research, education and public programs, and assist in the acquisition of items that enrich the Museum's collections. We would especially like to acknowledge those who generously leave a gift to the Australian Museum in their will – a lasting way to benefit generations to come.**

Find out how your support can make a difference to the important work of the Australian Museum. Contact the Development Branch on **02 9320 6216** or **development@austmus.gov.au.** Donations to the Australian Museum and its Foundation are tax deductible.

NSW GOVERNMENT

**PRINCIPAL PARTNERS**
Australian Museum Members
BJ Ball Papers
City of Sydney
Geddes Group
IBM
JCDecaux
Lizard Island Reef Research Foundation
National Geographic Channel
Rio Tinto
Scitech
Sydney Grammar School
*Sydney's Child*
*The Sydney Morning Herald*

**GIFTS TO COLLECTIONS**
Steven and Janine Avery
Ursula Burgoyne
Louise and Sam Dawson
Rod and Robyn Dent
in honour of Pat Dent and the Wanindilyaugwa tribe
John L Gordon
Mark Hanlon
Mrs J Holliday
The Late John Hume
John Rankin
George and Edna Oakes
Paul Scully-Power
Trevor Shearston
Muriel Snell

**AUSTRALIAN MUSEUM FOUNDATION**

**President's Circle**
Dr Zeny Edwards
Christopher Grubb
Ian and Stephanie Hardy
Mrs Judy Lee
Diccon Loxton
Helen Molesworth
Rob and Helen Rich
David and Daniela Shannon
The Sherman Foundation

**Supporters**
Antoinette Albert
James and Belinda Allen
Michelle Atkinson
Mr and Mrs KR Bell
Jane Beniac
Sir Ron Brierley
Alan Cameron
Elizabeth Cameron
Peter and Rose Cassidy
Ken Coles AM and Rowena Danziger AM
P Cornwell
Debra Cox
Patrick and Ailsa Crammond
John Dickinson
Hugh Dixson
Suellen and Ron Enestrom
Estate of the late Clarence E Chadwick
Estate of the late Patricia M Porritt
Estate of the late Merrill Pye
Estate of the late Gwendoline A West
Leon Gorr
David Greatorex AO and Dee Greatorex
Owen Griffiths & Biodiversity Conservation Madagascar Assn
Ken Handley AO and Diana Handley
Ronnie Harding
Bill and Alison Hayward
Ann Hoban
John and Mary Holt
Dan Howard SC and Dr Rosemary Howard
Frank Howarth
Gilles Kryger
John Lamble Foundation
James E Layt AM
Margaret Mashford
Robert McDougall
Mabs Melville
Tempe Merewether OAM
Stephanie Miller and Martin Pool
Dame Elisabeth Murdoch AC DBE
John Neuhaus
Justice Henric Nicholas
The Noonan Family
David Norman
Alice Arnott Oppen OAM
Andrew Pardoe
John Pearson
Loris Peggie
Adrian and Dairneen Pilton
David Robb
Jane and Neville Rowden
Reid Family
Rosemary Swift
Senta Taft-Hendry
Vera Vargassoff
Tony White AM and Doffy White
Jennifer Wright