

VOLUME  
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# explore



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# ON THE HORIZON

Two interesting opportunities face the Australian Museum as we plan our temporary exhibition program for the coming years.

The first concerns the anniversary of World War I, and more particularly the centenary of Gallipoli in 2015. What should the Australian Museum show as part of that commemoration? We've already decided not to do a war-related exhibition.

Our colleagues in the various historical and war-related museums will do that extremely well. Equally, we want to say something about the rich cultural heritage of the Middle East and of Turkey in particular. Following the Great War, Australia and Turkey developed very close bonds, but what story should we tell? We could talk about the rich history of Turkey over several thousand years, or we could tell the story of contemporary Turkey, perhaps Istanbul, which is well known and loved by many Australians.

## CHEONGSAM

The second opportunity concerns an exhibition which at one level is about cultural change in China in the 20th century. At another level it's about the changing role and rising prominence of Chinese women in several parts of the world. The exhibition centres on the woman's dress known as the cheongsam, which originated in Shanghai in the early 20th century. The development of the cheongsam coincides with the opening up of China through trade. During this time, men adopted Western suits and women progressively adopted a feminised version of the traditional, men's full-length 'Manchu' robe. The cheongsam spread from Shanghai through Hong Kong to Singapore, and probably to Australia. Is this the sort of story that we should be telling?

These examples raise the greater question: what kinds of temporary exhibitions should we show? Our mission is to inspire the exploration of nature and cultures, but that leaves us a very wide field. The Museum's mandate was largely established in the late 19th and early 20th centuries and was based on a scientific view of cultures, with a strong focus on Indigenous Australia and the Pacific. Yet by Federation, the cultural face of Australia, though still largely British, already included many of the diverse cultures that make up contemporary Australia.

## TRENDS

There are at least three trends that will influence our exhibition offerings. First, and increasingly, tourists from East and South Asia are the future face of tourism to Sydney and to the Museum. How should we respond to that changing nature of our audience?

Second, the thematic boundaries between Sydney's cultural institutions are no longer so clear-cut. Gone are the days when the Art Gallery showed just art, the Powerhouse focused on engineering or design, and we showed only natural sciences and indigenous cultures. The world is changing, and all of us in Sydney's cultural institutions are looking at the most effective and engaging ways of telling important stories. In doing so, the traditional lines between our respective temporary exhibitions are blurring.



*“... all of us in Sydney’s  
cultural institutions  
are looking at the most  
effective and engaging  
ways of telling  
important stories”*

The third trend affecting our exhibitions is technology, particularly the take-up of handheld devices, such as very smart mobile phones, fast access to the Internet, and social media. This trend gives us great opportunities to be more creative, flexible, and innovative and may have implications for the stories we tell and how we tell them. We need to be more responsive to the breadth of our audiences and to the technology they bring with them.

#### **DISPLAYS**

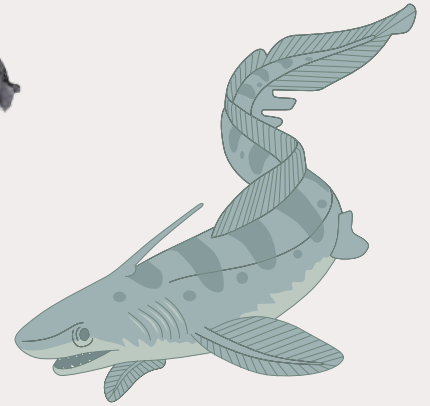
We will continue our program of major external exhibitions like *Alexander the Great* but will complement these with smaller exhibitions that look at nature and culture in different ways. To enable this, we are creating more spaces throughout the Museum for temporary displays. As an example, the refurbished *Indigenous Australians* gallery features a new dedicated space which opens with the Museum’s magnificent *Menagerie* collection of contemporary Indigenous art, now home following a two-year national tour. Also, new display cases and screens throughout the Museum will show snapshots of other treasures from our rich collection, with a special display coming up of amazing armour from Pacific nations.

#### **FRANK HOWARTH**

Director of the Australian Museum

#### **WEBLINK >**

Tell us what kinds of stories you think we should talk about at [www.australianmuseum.net.au/blogpost/On-the-horizon](http://www.australianmuseum.net.au/blogpost/On-the-horizon).



# A FRESHWATER SHARK *from southwest sydney*

## Left

The fossil xenacanth specimen clearly shows the head (left), teeth and fins. Photo © Steve Avery.

## Right

Reconstruction of a xenacanth. Illustration by Jeremy Austen.

A MYSTERY FOSSIL PROVIDES A WINDOW INTO THE EVOLUTION OF SHARKS, SAYS MUSEUM PALAEOLOGIST **YONG YI ZHEN**.

Several years ago, a Sydney fossil collector noticed fragments of fossil bone among rocks bulldozed during roadworks near Picton, southwest of Sydney.

After nearly six years of painstaking effort to prepare and glue the pieces together, like a giant jigsaw, he had a near-complete, one-metre-long fossil shark. The collector, Steve Avery, donated this unique specimen to the Australian Museum in 2011.

### STRANGE SPINE

The fossil appears to be a xenacanth (meaning 'strange spine'), a group of sharks that inhabited freshwater environments from the Late Devonian to the end of the Triassic, around 200 million years ago.

Xenacanth typically had characteristic teeth, a long, rear-pointing spine just behind the head, an eel-like body, an elongate dorsal fin extending along most of the back, and a symmetrical, tapering tail. They were top predators in river and lake environments and grew to four metres in length.

The current specimen shows scattered teeth and the large pectoral fins but so far no sign of the spine. Could it be from a previously undiscovered group of creatures? We won't know until it is formally examined by experts.

### LAST SUPPER

Interestingly, fossilisation has also preserved the specimen's stomach contents, which could reveal its feeding habits and its

'last supper' menu. Its small teeth relative to body size suggest that the shark had to grasp and swallow its prey whole.

The origins of sharks, which today have cartilaginous skeletons rather than bone, and their early evolution is still a mystery. Contrary to the traditional view that sharks were more primitive than bony fishes, the discovery of bone tissue in some fossil sharks suggests they could have evolved from bony ancestors.

Sharks are among the oldest surviving vertebrate groups, and have evolved slowly, but have successfully survived at least five major mass extinction events throughout their history.

DR YONG YI ZHEN TECHNICAL OFFICER, GEOSCIENCE

### Further reading

JA Long, 1995. *The rise of fishes – 500 million years of evolution*. UNSW Press, Sydney.

# THE ALEXANDER *experience*



THERE'S A FESTIVAL OF IDEAS OPENING UP AROUND THE ALEXANDER THE GREAT EXHIBITION, AND IT'S BEING DRIVEN BY SYDNEY'S MULTICULTURAL COMMUNITIES, SAYS PROGRAM COORDINATOR **THEODORA MINAS GIANNIOTIS**.



For the last three months I've been working with many of Sydney's multicultural communities to develop a program of events for the *Alexander the Great: 2000 years of treasures* exhibition. My guiding principle is to add value to the visitor experience – with the emphasis on 'experience'. Here's just a taste of what to expect.

#### **CONNECTING WITH COMMUNITIES**

Community groups want to be engaged as part of the journey and they have offered their music, their speakers and their educators to the program. It's all very inclusive, with the Greek community, Egyptians, the Former Yugoslav Republic of Macedonia and Russians, of course.

So these groups are bringing along their cultures, deeply influenced by Alexander and Hellenism, and offering it to the Museum's audiences. We're taking on their opinions about how it should be done, so when we look at the Sunday lecture series for example we'll have lectures that look at the Hermitage, at Egypt, Greece, Afghanistan, India and Pakistan.

#### **FAMILY STORY TIME**

In family story time on Saturday afternoons, authors will read their works for different age groups – the under-fives, five to eight,

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**Opposite**

Adriano Cappelletta (left) and Matt Ralph-Ynfante (right) appear in *The Great Adventures of Alexander the Great*, part of the January school holiday program. Photo by Carl Bento.

**Right**

The Sydney Ancients are coming your way. Photo © Sydney Ancients.

**Far right**

Theodora Minas Gianniotis. Photo by Carl Bento.



and so on. Story time is an old tradition still prominent in so many cultures, from Australian Indigenous cultures to all of the ethnic community groups I've been speaking with. They still practise that idea of storytelling, either through song or verse. It's a family tradition and it's how Alexander was educated – it's oral history, and it's still very much alive.

**MUSEUM AT NIGHT**

The Museum will be open on special evenings during the exhibition for talks, musical events and Jurassic Lounge. You'll be able to see the exhibition in a more relaxed setting, take in a talk with like-minded people, have some wine and cheese. It's something to do midweek that's not burdensome but enjoyable – a nice thing to do after work, pop into the Museum.

People will need to book for the lectures to secure limited seating, and for catering purposes, but there may be a few tickets at the door. The talks focus on pieces from the exhibition and snippets of Alexander's history, especially his mammoth Eastern campaign, and they really give a deeper understanding of how far and why he travelled and an appreciation of his legacy.

For instance, did you know there's a tribe of people in Afghanistan, the Kalash,

who claim to be descendants of Alexander? They speak a dialect of ancient Greek, have blond hair and blue eyes and are a minority group with markedly different beliefs to other Afghans. Mark Corcoran showcased them on ABC TV's *Foreign Correspondent*, and he's scheduled to talk about that particular place.

**FOLLOW THE CONQUEROR**

There's lots of freebies in the program too, like the 'Follow the conqueror' trail where kids follow a trail and pick up clues throughout the Museum with each clue related to the history and mythology of Alexander the Great. At the end of that, their prize is to join Alexander's army. I'm hoping we'll have a shield decoration activity as a way for children to contribute to the exhibition during the school holidays.

So I hope to see lots of Members as well as the general public at this community program. There really will be something for everyone!

THEODORA MINAS GIANNIOTIS SPOKE TO BRENDAN ATKINS

**WEBLINK >**

To find out more or book for an event, visit [www.australianmuseum.net.au/alexander-program](http://www.australianmuseum.net.au/alexander-program)

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**MIGRANT STORIES**

Working with ethnic community groups has just been such a pleasure. They've been so supportive and energetic, and there's an enthusiasm that really needs to be embraced. My cultural background is Greek, but when I speak to the Egyptians, for example, we speak the same language. I get where they're coming from, they get where I'm coming from; we've had that same migrant experience, which is just fantastic.

My parents migrated here from Greece in the sixties and settled in the Botany area. I was born here. Growing up, we spent a lot of time with large family groups listening to oral histories and stories about our culture. There were social events on the weekend, every weekend without fail, massive gatherings. You just didn't know a weekend without it. A lot of migrants came here without fathers, brothers, mothers or sisters, so these friends became family and these gatherings were their support network.

There's a lot of that spirit in what we're trying to do with this program of events. Tapping into ethnic groups is an untouched resource that mainstream cultural institutions really need to focus on. There's a depth there that can really be interpreted creatively.



# *the art of* EXPEDITIONING



THE SECOND STAGE OF THE MUSEUM'S EXPEDITION TO TIMOR-LESTE, COMPRISING 14 SCIENTISTS, OVER 50 CONTAINERS OF EQUIPMENT, 90 BOTTLES OF ETHANOL AND ONE ARTS POSTGRADUATE, RETURNED RECENTLY LADEN WITH SPECIMENS AND STORIES. THE MUSEUM'S ONLINE PRODUCER **MICHAEL HUGILL** WAS SENT ALONG TO BLOG, TWEET AND FACEBOOK FROM THE FIELD.



“... she prises and scrapes off clumps of flora and fauna”

**DAY 1**

Darwin. Capital of the Northern Territory, regional centre of the Top End, gateway to Timor-Leste, and for 18 hours host to the Australian Museum’s crack squad of marine scientists. And what is the first place they visit after checking into the hotel? The Museum and Art Gallery of the Northern Territory. You have to respect their consistency. The NT Museum’s *Gone Fishin’* exhibition turns out to be very interesting and apt – much of what we collect may well end up on display too.

**DAY 2**

Many of the things I’d read or heard about Dili appear immediately to be true: it’s hot and humid but not unbearably so; the people are indeed friendly; the roads are a pleasant kind of organised chaos; and I notice the graffiti is of the hand-written, heartfelt kind: old messages of protest, romance, and very often just someone’s name.

After settling into our accommodation by the beach 10 minutes west of the CBD, we split into teams for the afternoon: one to fetch the ethanol, one to pick up our freight (diving gear and collecting apparatus), and one to continue setting up ‘base’ at our hotel. While the freight team is ultimately unsuccessful in its mission (we had been warned that processing these things can take time in Timor), collecting the ethanol is an important victory. Without it, green specimens might come to be described as blue specimens, but that’s another story.

**DAY 3**

You would think in the year 2012 that collecting specimens, undertaking research, *doing science*, wouldn’t be possible without lasers, sensors, nifty gadgets and the latest in outdoor clothing technology. Well, it turns out all you need is a bin, some plastic bags, a knife and a wetsuit. With all our diving and sophisticated collecting equipment still being held up at Customs, I join three of our marine biologists on a collecting trip to a wharf about 20 minutes’ walk from our accommodation.

Once there, Penny Berents (Head of Natural Science Branch) swims out to some of the deeper pylons with a snorkel, a knife between her teeth (actually she held it in her hand) and some kitchen bags stuffed into her wetsuit. There she prises and scrapes off clumps of fauna and flora (such as algae, ascidians, hydroids and sponges) and somehow manages to get these into the bags and back into her wetsuit. Returning to shore, she’s something like a nautical peddler, pulling all kinds of specimens out of her suit.

**Opposite**

Scientists Nerida Wilson and Greg Rouse give the ‘A-OK’ while collecting sediment samples. Photo by Dive Timor Lorosae.

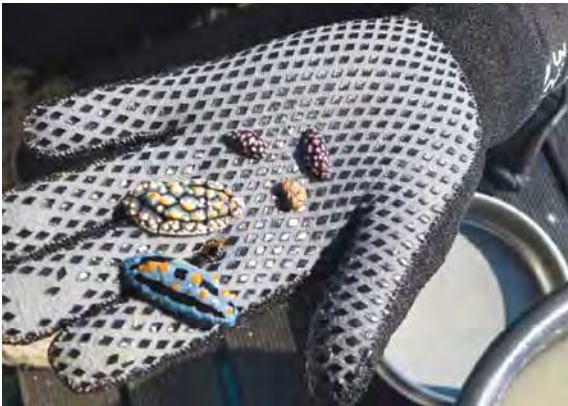
**Below**

Technical Officer Anna Murray and Natural Science Branch Head Penny Berents inspect habitat samples. Photo by Michael Hugill.

**Bottom**

Many of the expedition’s dive locations featured spectacular reef coverage, such as these sea squirts. Photo by Greg Rouse.





**Far left**  
These small, colourful nudibranchs were collected at Atauro Island. Photo by Michael Hugill.

**Left**  
Principal Research Scientist Jim Lowry collects sand-hoppers using a 'pooter', much to the fascination of locals. Photo by Michael Hugill.

#### DAY 4

'This is why I do science', says Senior Principal Research Scientist Pat Hutchings as she places her habitat samples in the Esky aboard the boat. 'No more of that laboratory stuff for a little while; it's just great to be out in the field.'

I hear variations of this from many of the scientists after their first dive today, all excited to finally be collecting samples as they intended. From just a few hours out at sea can come many months of laboratory work. But no doubt memories of today – diving together in clear, warm water on beautiful coral reefs in the shadow of the giant Jesus statue that overlooks Dili – will keep them going through the solitary (and sterile) laboratory hours.

#### DAY 5

It's about a two-hour boat ride to Atauro Island, cruising over some very deep water. This is definitely not a P&O trip, but with a clear sky and bright sun overhead, fresh salty air in our noses and plenty of cans of Coke on board, the mood is definitely 'buoyant' (even if I'm depressed that all the pun-making these scientists do is rubbing off on me).

The scientists make two very successful dives on what are absolutely pristine reefs. At 10 pm that night several of them are still sorting and preserving their samples from the trip on our dinner table. Having realised on Day 2 that scientists sit down to work far more often than they do to eat, I don't ask what's on the menu.

#### DAY 6

We had requested to be taken to a location with seagrasses in order to see different fauna to the previous diving locations but, unfortunately, there was no seagrass to be found that day. The divers made the most of the scattered coral heads, rubble and sand, however, which was something our marine invertebrate specialists were just fine with actually.

#### DAY 7

After several days out on the boat, it's time to join the shore team and witness the magic that is a 'pooter' in action – the strangest of all collecting tools. At a beach not far from where we dived yesterday, scientist Jim Lowry places the end of one tube in a bucket of beach wrack and the end of another in his mouth. Both tubes are connected to a sealed specimen jar so that when Jim sucks on one tube, tiny talitrids (also known as sand-hoppers) are vacuumed out of the bucket with the other and collected in the specimen jar. Up close he looks like the Indiana Jones of biology; from a distance he looks like someone drinking from a bucket.

#### DAY 8

The second-to-last day of collecting was a chance for me to better observe and report on what happens to specimens once they're collected. All of the scientists, whether they specialise in fish, worms or tiny amphipods, aim to preserve their specimens as quickly as possible and to record crucial information. These measures will assist with future study and analysis back at the Museum.

#### DAY 9

There is no collecting on the last day, only packing. After multiple trips to the freight yard, across hot, dusty and busy streets, all our specimens are, quite literally, wrapped up and ready to be sent back to the Museum. That night we gather together in the restaurant of our hotel for the first time as a group and, as scientists trade stories of striking reefs in the night, encounters with sharks and of course the ones that got away, I make my way around the table asking each of them for their highlight of the trip. The most common answer? The joy of working together as a team and learning from each other's experience and skills.

MICHAEL HUGILL ONLINE PRODUCER

#### WEBLINK >

Read Michael's full blogs at [www.australianmuseum.net.au/Timor-Leste-Expedition](http://www.australianmuseum.net.au/Timor-Leste-Expedition).

The Timor-Leste Expedition is one of the largest biological surveys undertaken by the Australian Museum and was funded by a private anonymous donor. The expedition has added significantly to the Museum's collections, and the results will provide a basis for the design of a protected area network in Timor-Leste.

*looking back at*

# PAPUNYA

THE PAPUNYA PERMANENT COLLECTION



RECOGNISED WORLDWIDE FOR ITS DOTTED DESIGNS ON LARGE CANVASSES, THE PAPUNYA ART MOVEMENT'S EARLY PAINTINGS ARE OF SPECIAL INTEREST, SAYS MUSEUM ANTHROPOLOGIST **KATE KHAN**.

I first saw them in May 1978. It was in the offices of the Aboriginal Arts Board in North Sydney where they were being stored for safe keeping. I carefully opened the brown paper parcels and out came these small, exquisite paintings. They were vivid, almost jewel-like, and quite unlike most other art coming out of the Western Desert at that time.

#### **STARK BEAUTY**

Known as the Papunya Permanent Collection, these early paintings had been especially put aside by pioneering art teacher Geoff Bardon and Papunya manager Peter Fannin between 1972 and 1974. They were painted on Masonite, chipboard and off-cuts, and a couple were on larger hardboard rectangles. One had an object in the centre painted a vivid blue; another, a hot pink wash over the surface, neither being the expected traditional desert colours.

Overall I was taken aback by their strength and beauty. Some were complex and detailed, and others so stark your attention was riveted. You could see the marks on some paintings as the artist used his fingers to put down his Dreaming story. There was little evidence of dotting, so prevalent today.

And, of course, at this time no international market for the paintings existed; the artists were lucky to get five bucks for a painting at the local pub in Alice Springs.

I was looking at the beginnings of the Papunya or Western Desert art movement. It had been a time of experimentation with new surfaces, paints and brushes and the artists would never paint that way again. I also knew that some of the paintings would never be shown because of the secret symbols depicted.

Regretfully, I re-wrapped the paintings and placed them in the Aboriginal Arts Board storeroom. Little did I realise just how much impact these artworks were to have on my life.

#### **JOURNEY**

Some years later I was working at the Australian Museum when Papunya Tula Artists offered the collection to the Museum. They were still looking for a safe place for the paintings to be looked after and available for future generations.

The paintings arrived in October 1983 with little or no documentation. So I began a race against time to find out about the artists, their Country and Dreaming. I knew many Aboriginal people from the Western Desert, having visited these communities while working for the Aboriginal Arts Board.

I made annual trips to the area between 1984 and 1989, visiting senior artists at Papunya and outstations. Travelling to Central Australia in winter (June–July) each year was a time when the countryside was green. Wildflowers, their vivid purples, reds, whites and yellows, were everywhere. Desert oaks lined the back road between Yuendumu and Papunya, with the occasional stark white gum against a blue sky. Mulga wood stakes lay in wait to puncture tyres. Greenish-yellow paddy melons grew along the roadside in the red earth, and rusting, broken-down cars were scattered over the countryside.

Driving along the red road from Yuendumu to Papunya in the 1980s, I felt I could understand the homesickness that assailed men from these regions when they came to the city: the purple of the hills around Papunya; Haasts Bluff rising out on the road; the bean trees, mulga and desert oaks around Mount Wedge.

This story contains the names and images of people who are now deceased. Some Aboriginal communities may be distressed by seeing the name or image of a community member who has passed away.

*“It had been a time of experimentation with new surfaces, paints and brushes and the artists would never paint that way again”*

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#### **Previous page**

*Tingarri Dreaming* 1971 by Walter Tjampitjinpa. Pintupi language group. Synthetic polymer paints on composition board. 53 x 41 cm. In the Dreamtime groups of ancestral men and women called Tingarri travelled over the countryside performing rituals, creating geographical features and establishing rules of behaviour. Artists talked of a big stone and a creek in this painting. E79169. Reproduced courtesy Aboriginal Artists Agency Limited.

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#### **Opposite**

Anthropologist Kate Khan with untitled painting, artist unknown, c. 1971. 49 x 44.4 cm. E.79200. Photo Carl Bento.





**Below**  
*Honey Ant Dreaming* 1973  
by Tim Leura Tjapaltjarri.  
Anmatyerr/Arrernte  
language group.  
Synthetic polymer paints  
on composition board.  
62 x 59 cm. Papunya  
is an important place for  
the Honey Ant Ancestors.  
This painting is typical  
of Tim Leura's wash effect  
with a painting beneath  
a painting. E79226.  
Reproduced courtesy  
Aboriginal Artists  
Agency Limited.

**Left**  
Haasts Bluff, near Papunya,  
1986.

**Right**  
Daphne Williams and Kate  
Khan (behind the tree) with  
Uta Uta Tjangala and his  
family at Ininti Creek,  
near the Western Australian  
border, June 1986.

**Far right**  
Markings made by artists  
in the earth when  
discussing the Papunya  
paintings. All photos  
by Kate Khan.





### MEETING THE ARTISTS

At Papunya I stayed at the artists' house which belonged to Papunya Tula Artists. It was a meeting place for painters where wooden stretchers were laid out waiting for the canvases, the blank canvas boards stacked against the walls. I showed photographs of the early paintings to the elderly artists and recorded as much information about them as possible during my visits.

The men (all the early artists were male) would come by the house and we'd sit on the floor and talk about the old paintings. Some would elaborate on a story by making markings with their fingers in the red earth outside the house.

I also visited artists on outstations. In the 1970s, there was a move by Aboriginal people to return to their own country. Many wanted to leave the large settlements such as Papunya and Yuendumu and settle with their own kin on their own lands in small communities.

These meetings were always interesting. There was Uta Uta Tjangala, a man with a great sense of humour who made us all try to walk around balancing a wooden dish on our heads; Pinta Pinta Tjapanangka, on his way to Alice Springs one day, telling the driver to wait in the car while he rushed in to have another look at the photographs of the paintings and talk to me about them once again;

George Bush Tjangala, his wife, Carol Nangurrayi, and Mick Namarari Tjapaltjarri at Nyunmanu outstation, all giving me their opinions on the paintings.

My visits to Kintore, near the border with Western Australia, always meant a solid working session with George Tjangala, Charlie Tarawa (Tjaruru) Tjungurrayi and Billy Nolan Tjapangati; lots of talk about the paintings, eventually reaching a consensus most times.

Old Mick Wallankarri Tjakamarra organised a Honey Ant Dreaming ceremony for me in Papunya in June 1988, and with his wife, Topsy Napaljarri, taught me the significance of this Dreaming, so important at Papunya. To the north of the road as you drive into Papunya are the low Pupunyi hills, from where Papunya gets its name. They were formed by the Honey Ant Ancestors as they stooped down nearing Papunya. (Pupunyi means 'to stoop down').

Many paintings were secret/sacred or on the fringes of doubt, and referred to as 'tickly'. I was asking the artists to look back at something they had done 20 or so years previously and rethink a way of life that had changed. Often the comment was that 'we would not do that today' followed either by earnest discussions or an unbroken silence when I could only wonder what they were thinking.

The artists with whom I discussed the paintings were all highly respected senior men with full ritual and ceremonial knowledge. I also owe so much to Dick Kimber, who managed the Papunya Tula Artists cooperative in the 1970s, and whose knowledge of the peoples and cultures of the Western Desert are legend.

I am deeply indebted and very grateful to all of these people for sharing their knowledge and understanding of the works, now a crucial part of the Museum's information database. But it should be remembered that these interpretations can only give a glimpse into another world of meaning – to understand all is the journey of a lifetime.

KATE KHAN SENIOR FELLOW, AUSTRALIAN MUSEUM

This is an edited extract from Kate Khan's unpublished manuscript, *Looking Back: the story of a collection*.

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#### Further reading

FR Myers, 2002. *Painting Culture. The Making of an Aboriginal High Art*. Duke University Press, USA.

G&J Bardon, 2004. *Papunya. A Place Made After the Story*. The Miegunyah Press, Melbourne.

V Johnson, 2008. *Lives of the Papunya Artists*. IAD Press, Alice Springs.

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# THE ADELIE LAND

IT WAS EXACTLY 100 YEARS AGO THAT SCIENTISTS ON THE AUSTRALASIAN ANTARCTIC EXPEDITION LED BY SIR DOUGLAS MAWSON CAME UPON THE FIRST METEORITE TO BE FOUND IN ANTARCTICA, SAYS GEOLOGIST ROSS POGSON.

**Opposite**  
Collection Manager Ross Pogson with the Adelie Land Meteorite.  
Photo by Carl Bento.



Meteorites are rare objects which have always attracted curiosity and scientific interest. Most start their journey as orbiting chunks of metal or rock from the Asteroid Belt between Mars and Jupiter, about 400 million kilometres from the Sun.

Orbital disturbances can send them hurtling towards Earth, and if they are large enough to survive heating in Earth's atmosphere, they are found as meteorites. They are early survivors from our Solar System's formation and give vital information on its history, structure and composition.

#### CLAIM TO FAME

The Adelie Land stony meteorite has two unique claims to fame: it was the first meteorite ever found in Antarctica, and it was found on the 1911–14 Australasian Antarctic Expedition led by Douglas Mawson.

The meteorite was actually found by chance by expedition member Francis (Frank) Howard Bickerton. He was leading the western sledging party which crossed the coastal highlands west of Cape Denison on a mission to explore and map that area. On the outward journey, he found the meteorite lying on the snow in a shallow depression, about 32 kilometres west of Cape Denison on 5 December 1912.

The expedition had a very trying day so the meteorite find boosted their morale considerably. They reported that 'the meteorite discovery was a highlight in an otherwise difficult outward journey'.

Being dark in colour it was easily spotted against the white background, but it was remarkable to find such a rare object in that vast icy wilderness.

#### FIRST

Mawson donated this historic meteorite to the Australian Museum in 1924. When originally found it weighed about one kilogram and its rounded outer surface was completely covered with a dark brown fusion crust.

It belongs to a class of stony meteorites called chondrites, which represent the outer compacted granular layer of an asteroid. It was sliced for scientific study, so it is now possible to see its speckled interior with scattered bright nickel-iron flecks.

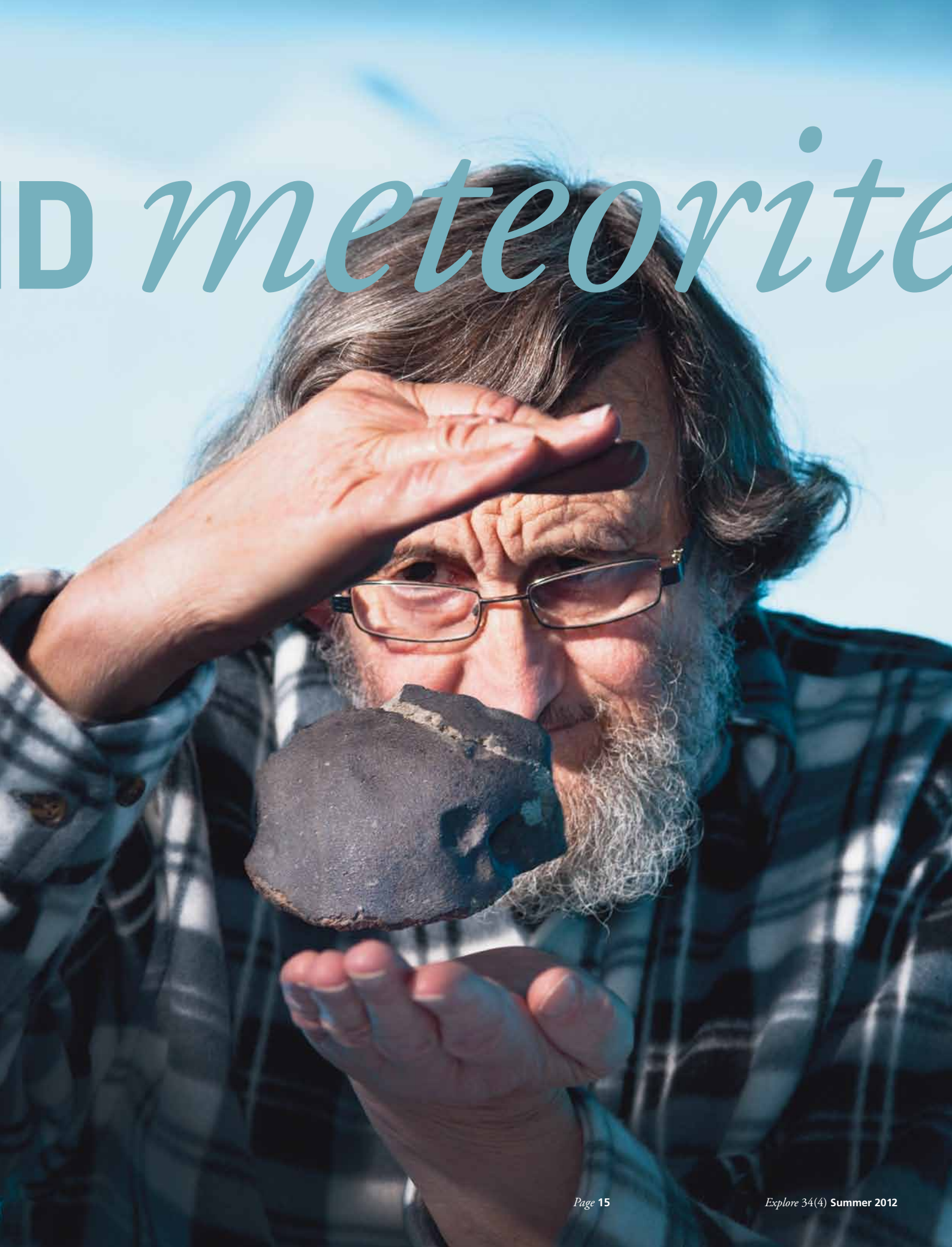
Tens of thousands of meteorites have now been found on the Antarctic continent, mainly by American, Japanese and European teams. However, the 'Adelie Land' meteorite was the very first to be recovered.

Its discovery by pioneer Australian explorers, working at the limits of human endurance, made scientific history. Its links with the famous Australian geologist and explorer Sir Douglas Mawson, and with the 'Heroic Age' of Antarctic exploration, make it very special.

ROSS POGSON COLLECTION MANAGER, GEOSCIENCE



# D *meteorite*



GIVEN A CHOICE BETWEEN FIELDWORK ON THE CORAL REEFS OF BALI OR SITTING IN FRONT OF A MICROSCOPE IN A MUSEUM LABORATORY, BIOLOGIST **AMANDA WINDSOR** CHOOSES THE MICROSCOPE EVERY TIME.



# MEETING *amanda*



‘I can do it hours at a time and even for days and days ... the scuba diving and actually going and collecting things is great [but] to me the crabs are the important part – I want to know what they are.’

It’s a quest that has taken Amanda from her home in landlocked Ohio, USA, to the Coral Triangle, home to the most diverse reefs in the world.

‘It’s an area of the Indo-Pacific that’s defined by a really high abundance and diversity of corals. It goes from about Java over to the Philippines, and not much south of Indonesia. It’s also one of the most fish-diverse places in the world.’

## SPIDER CRABS

So why the interest in crabs, and spider crabs in particular?

‘If you look at all crabs or Decapoda, anything with ten legs, right now from Northern Bali we have roughly 300 species, just from dead coral. That’s far above anything found elsewhere.’

‘Spider crabs are actually interesting because they occur at most depths of the ocean, they occur in every ocean basin and they’re really widespread – which makes them very good subjects.’

‘They’re also called decorator crabs; it’s their other common name. Some species decorate their entire bodies with algae, sponge, sticks – they have this really strong drive to decorate.’

## TAXONOMY

As a doctoral student in Louisiana, Amanda was drawn to taxonomy. ‘Turns out, spider crabs are one of the most taxonomically obtuse groups, just revision after revision after revision.’

‘The species names have been more-or-less stable, but there’s not much agreement about which families they belong to.’

‘So now we’re taking a step back and saying, ok, let’s ignore all of the morphology and let the genetics tell us what we’ve got. Then slowly but surely we’re finding really good characters that we can use to tell groups apart.’

## COLLECTIONS

‘Working at the Australian Museum, I have the benefit of having access to collections that [former Museum Director] Des Griffin worked on, and he wrote with Helen Tranter this great book on the spider crabs of the *Siboga*, a Dutch expedition in Indonesia.’

‘Des wrote keys to all the families and genera, so I actually have the benefit of being here and going to look at the collections he identified and know that they’ve been identified properly.’

‘It’s why collections are so important. The crabs in this collection date from 1899, the book came out in 1986, and in 2012 I’m still using it every day. I’m able to go back and look at the very same specimens in the collection that appear in the book.’

## Opposite

Amanda Windsor with spider crab specimens from the Museum’s collection. Photo by Carl Bento.

## Above

A decorated spider crab, *Menaethius orientalis*, collected at Gapang, Pulau Weh, Indonesia, length 5 mm. Photo by Amanda Windsor.

Amanda is continuing to add to these collections through field work at the Indonesian Biodiversity Research Centre (IBRC) in Bali where she teaches biodiversity and field methods to students from across Indonesia.

‘It really gives Indonesian students an opportunity to do field work and do research on biodiversity that their universities can’t offer. Many students don’t have a molecular lab, so unless they can get to the IBRC they might not get to do molecular work.’

## OUTCOMES

Amanda’s work on crab taxonomy also has practical outcomes for managing coral reefs.

‘The Indonesian government has set up marine protected areas based on fish and coral diversity. But the decapods seem to make up a huge part of the reef community – do they follow the same patterns? Are the areas connected enough to help conserve other marine fauna?’

‘I think the more we know the better off we are.’

BRENDAN ATKINS EDITOR

Dr Amanda Windsor is working with Dr Shane Ahyong at the Australian Museum on an Australian Government Endeavour Award.

## on the RECORD

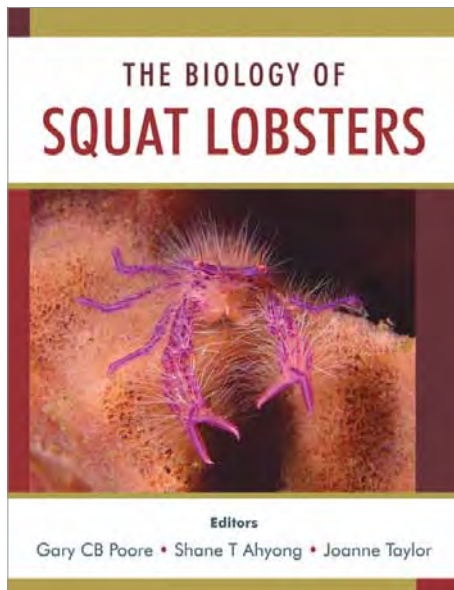
### WILDLIFE GENOMICS CENTRE LAUNCHED

The newly established Australian Centre for Wildlife Genomics (ACWG) at the Australian Museum draws on the knowledge of Museum wildlife experts and molecular biologists to answer questions about forensics, conservation and biodiversity.

‘The Centre holds an extensive frozen tissue collection which preserves genetic material from thousands of species’, said ACWG Head, Dr Rebecca Johnson. ‘It’s a key resource for our forensic work in identifying smuggled wildlife, quarantine incursions and wildlife involved in aviation strike.’

Meet ACWG staff at

[www.australianmuseum.net.au/Australian-Centre-for-Wildlife-Genomics](http://www.australianmuseum.net.au/Australian-Centre-for-Wildlife-Genomics)



### THE BIOLOGY OF SQUAT LOBSTERS

A major illustrated book on the biology of squat lobsters has taken out this year’s Whitley award for best invertebrate natural history book, awarded by the Royal Zoological Society of NSW.

The Museum’s Dr Shane Ahyong co-edited the book, which documents current thinking about one of the deep ocean’s better known groups of crustaceans.

‘Squat lobsters play crucial roles in the food webs of many marine environments, from the sea floor to extreme habitats like methane seeps, hydrothermal vents and sea mounts’, said Shane. Some squat lobster species are targeted commercially in Latin America but elsewhere are sought more for what they can reveal about the ocean depths. With the publication of this masterwork, current knowledge about squat lobsters can be accessed through a single volume, from how they evolved to how they live today. It’s a beautifully produced, comprehensive account of a fascinating group of animals.

Read more about the book at [www.publish.csiro.au/pid/6678.htm](http://www.publish.csiro.au/pid/6678.htm)

### NEW BARRAMUNDI SPECIES

Museum Research Associate Rohan Pethiyagoda and Sydney University’s Tony Gill have described two new species of barramundi from Myanmar and Sri Lanka. This high-profile group of fishes has vast importance in commercial fisheries and aquaculture, with barramundi, *Lates calcarifer*, among the most important food fishes in tropical Australasia and parts of Asia. The discovery adds to our knowledge of an important resource but also raises questions for biodiversity conservation: farmed species are moved around from place to place, potentially contaminating the gene pools of local populations in a wide area between India, Australia and Japan.

Read the original scientific paper in the journal *Zootaxa* at [www.mapress.com/zootaxa/2012/f/z03314p016.pdf](http://www.mapress.com/zootaxa/2012/f/z03314p016.pdf)

Summer December 2012 to March 2013

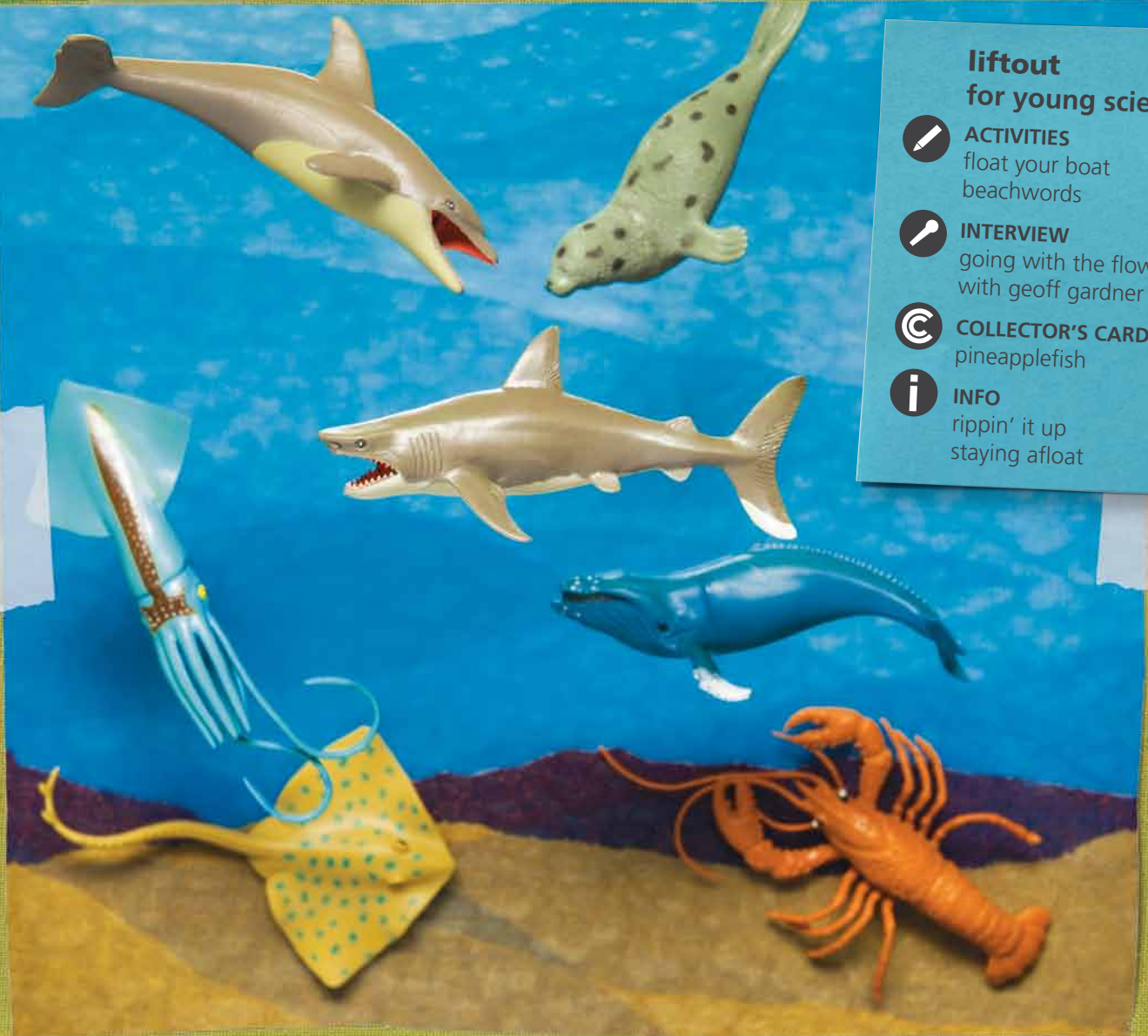


# xplorer

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## liftout for young scientists

-  **ACTIVITIES**  
float your boat  
beachwords
-  **INTERVIEW**  
going with the flow  
with geoff gardner
-  **COLLECTOR'S CARD**  
pineapplefish
-  **INFO**  
rippin' it up  
staying afloat



# SINK OR SWIM!

**On the cover** Who knows what you'll meet at the beach this summer.  
Styling by Jeremy Austen. Photo by Carl Bento.

## RIPPIN' IT UP

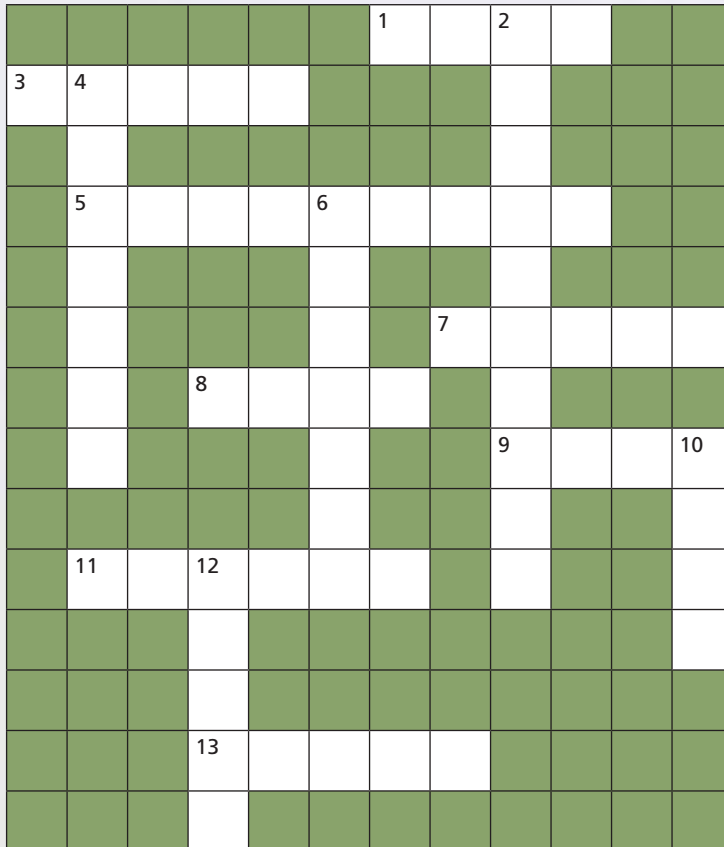
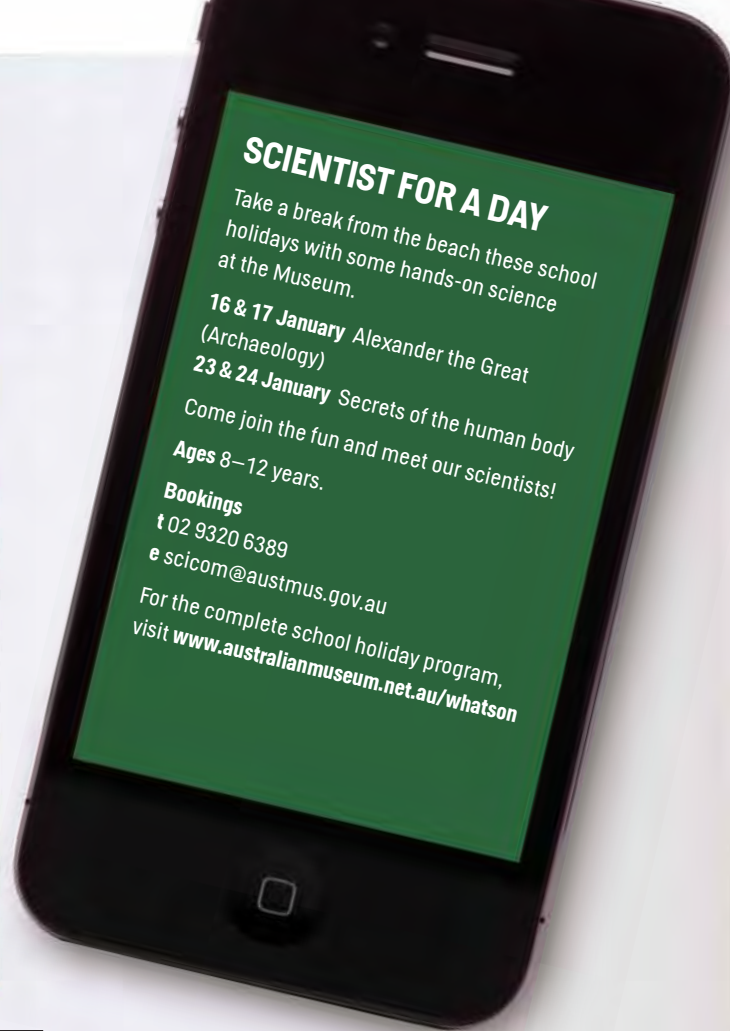
Enjoy the beach this summer, but look out for rips – they're the number one hazard on our beaches. In the last five years rips have been responsible for 41% of deaths by drowning in Australia.

A rip is a strong current of water that usually starts near the shoreline and moves away from the beach.

Before you enter the water, observe! To spot a rip, look out for the telltale signs: rips can appear as areas of darker or calmer water with fewer waves but can also look murky or brown.

To be safe, make sure you always swim between the red and yellow flags, swim with a friend and check the safety signs.

If you do find yourself caught in a rip, remember to stay calm and signal the lifeguard for help. Remember not to panic!



## BEACHWORDS

### ACROSS

- 1 Remember to stay \_\_\_\_ and not panic if caught in a rip
- 3 World famous \_\_\_\_ Beach has strong rips
- 5 Protect yourself from the sun with \_\_\_\_
- 7 Look out for \_\_\_\_ waters before swimming
- 8 Ride the waves on your \_\_\_\_ board
- 9 \_\_\_\_ are strong currents to be wary of
- 11 Look out for the \_\_\_\_ signs that warn you of hazards
- 13 Another beach hazard: sea \_\_\_\_ will steal your hot chips

### DOWN

- 2 If you get into trouble while swimming call the \_\_\_\_
- 4 Before entering the water, \_\_\_\_ the conditions
- 6 A rip is a strong \_\_\_\_
- 10 \_\_\_\_ gets into your cossie
- 12 Swim only between the red and yellow \_\_\_\_

All the **answers** are overleaf.

# FLOAT YOUR BOAT



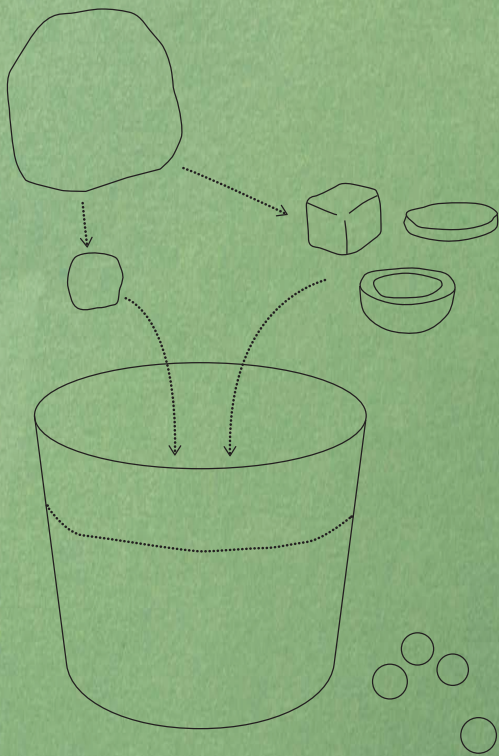
Learn how things float using plasticine and marbles!

You will need: a lump of plasticine, a tub of water and marbles to use as weights.

## What to do:

- 1 Make a ball with the plasticine.
- 2 Place the ball of plasticine into a tub of water.
- 3 Observe. Does the ball float or sink?
- 4 If it doesn't float, try moulding the ball into different shapes.
- 5 Place the shapes in the tub of water. Keep modifying the shapes until you find one that floats!
- 6 Once you've found a shape that floats, see how many marbles it can hold before sinking.
- 7 Try other shapes. Which shape holds the most marbles?

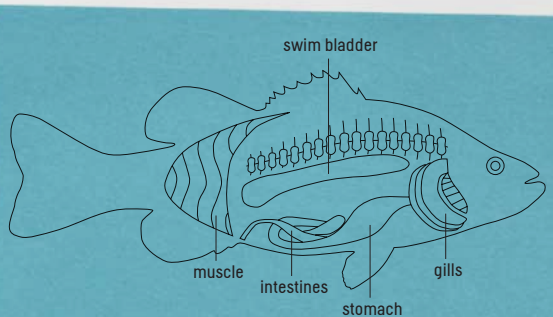
Why did some of the plasticine shapes float? Not sure? See 'Staying afloat' (above, right) or call the Science Communication team on 9320 6370!



# STAYING AFLOAT



Things float because they are supported by the buoyancy of the fluid (such as water) they are placed in. Buoyancy is the upward force or push of water that supports an object. If the object weighs more than the water it displaces, it sinks!



## FAST FACT

Many fishes have a kind of internal air sac called a swim bladder that helps them float. It expands with gases (such as air) giving the fish buoyancy. The gas levels in the bladder adjust to help the fish float or dive. Freshwater fishes have a larger swim bladder than saltwater fishes because fresh water is less dense than salt water.



Each issue of Xplorer includes a collector's card for you to cut out and keep!





## GOING WITH THE FLOW

**The Museum's Geoff Gardner is a science communicator with a background in marine biology – interviewed here by Museum Studies student Nadiye Cicek.**

**NADIYE: What's your role at the Museum?**

**GEOFF:** I've completed a Bachelor of Science in Marine Biology and I've been working at the Museum since 2009 in the Science Communication department. I first started volunteering at the Museum like a lot of the people here do. In Sci Comm, we organise the big science festivals including the Australian Museum Science Festival held every August here in Sydney. We also do regional tours around New South Wales and Australia all throughout the year and they're full of hands-on workshops, shows and the big expo. We've also run our Scientist for a Day program, held in the school holidays for 8 to 12 year olds.

**NADIYE: So what is marine biology?**

**GEOFF:** A marine biologist looks at things like organisms in the oceans or in marine environments. You can be looking at fish, whales, invertebrates, plankton or corals, anything to do with the marine environment including beaches, mangroves – lots of different environments!

**NADIYE: Talking about fish, how many fish are there in Sydney Harbour?**

**GEOFF:** Well, scientists, scuba divers and the general public have discovered around 600 species of fish in Sydney Harbour. Most of these are from the eastern side of the Harbour

Bridge with the East Australian Current bringing them in as larval fish and juveniles, but a lot of them are stationary and their homes are in Sydney Harbour. Some have been here for years!

**NADIYE: What's your favourite fish?**

**GEOFF:** My favourite fish is quite similar to my favourite fruit, which is pineapple. It's the Pineapplefish! The Pineapplefish has yellow scales with black margins [see collector's card below]. If you scuba dive, you might find them as they live on rocky shelves around 5 to 25 metres in depth. They normally form small schools and stick to one area as they're not migratory.

**NADIYE: Going back to the East Australian Current, what is it?**

**GEOFF:** The East Australian Current runs down the east coast of Australia from the tropics. It brings the warmer waters from the north down to the cool waters of the south. If you've seen the film Finding Nemo, all the turtles come down and Nemo jumps on board and gets caught in it. The current comes down past Sydney Harbour and drops off all the larval fish!

**WEBLINK >**

See Nadiye interview Geoff at [www.australianmuseum.net.au/Explore](http://www.australianmuseum.net.au/Explore).

Geoff points out a Pineapplefish to Nadiye in the Museum's *Surviving Australia* exhibition. Photo by Catherine Beehag.

THIS EDITION OF XPLORER COMPILED BY NADIYE CICEK

### Pineapplefish

The Pineapplefish, *Cleidopus gloriamaris*, gets its name for obvious reasons – it looks like a pineapple because of its robust yellow-orange scales. It can also produce light from special organs on either side of the lower jaw, a greenish glow that changes to red in older fish.

The Pineapplefish grows to 25 centimetres long and is found on shallow coastal reefs on the east and west coasts of Australia, but is not recorded from Victoria and South Australia. It also occurs in deeper offshore waters. The similar Japanese Pineapplefish, *Monocentrus japonicus*, also occurs in Australian waters and can be distinguished from 'our' Pineapplefish by its more rounded snout.

For more photos of Pineapplefish, including a cool X-ray, go to [www.australianmuseum.net.au](http://www.australianmuseum.net.au) and search for 'pineapplefish'.



Photo © Richard Vevers,  
[www.underwaterearth.org](http://www.underwaterearth.org).



### ANSWERS from previous page

#### Beachwords

**Across** 1 calm 3 Bondi 5 sunscreen 7 murky 8 surf 9 rips 11 safety 13 gulls  
**Down** 2 lifeguard 4 observe 6 current 10 sand 12 flags



Send your query to the Search & Discover team, email [sand@austmus.gov.au](mailto:sand@austmus.gov.au)

# search > DISCOVER



**Q.** Can you identify this translucent creature found on the shoreline with incoming tide?

Your photo shows the larva of a rock lobster, most likely the Eastern Rock Lobster, *Sagmariasus verreauxi*. The adults live in reef habitats ranging from shallow rock pools to the continental shelf and are commonly found in restaurants! It is distributed from southeast Australia to New Zealand and adults can grow to 15 kg and 60 cm.

After mating, a female rock lobster will carry thousands of tiny orange eggs under its tail. The eggs hatch after about six months and go through a succession of moults (14 of them – among the longest larval development of any marine creature) before they reach the adult form. This larva is the phyllosoma stage and, as your photo highlights, the larval stages do not resemble the adults much at all.

#### WEBLINK >

Find out more about lobster life cycles at [www.australianmuseum.net.au/Eastern-Rock-Lobster](http://www.australianmuseum.net.au/Eastern-Rock-Lobster).

This larval rock lobster, just a few millimetres across, looks nothing like the adult. Photo © Sandra Clark.



**Q.** What are these mysterious things we found washed up on the beach at low tide?

These are a type of nudibranch (sea slug) known as sea hares, *Aplysia*. They look like this when they wash up on the beach dead or dying and are then referred to as beach bobbies. Sea hares certainly look very different when swimming. As they tumble about in the surf they retract their eye-stalks and mantle flaps. If you find one still alive, drop it into a rock pool overnight and it will return to its original form. Sea hares are quite harmless to people, though some can squirt ink, but beach bobbies are poisonous to dogs if eaten.

#### WEBLINK >

See photographs of living *Aplysia* at [www.seaslugforum.net](http://www.seaslugforum.net)

Beach bobbies, *Aplysia*, are a type of nudibranch (sea slug) also known as sea hares. Photo © Vanessa Eden.



**Q.** We found this creature on the water's edge. We have never seen anything like it before or since. Can you tell us what it is?

You've found a sea lizard, *Glaucus atlanticus*, another type of nudibranch or sea slug (a marine gastropod). The reason you haven't seen it before is it prefers the open sea to inshore waters and occurs throughout the world's oceans, in both temperate and tropical waters. The east coast of Australia is one of the regions where *Glaucus* floats upside down on the surface of the ocean. It feeds almost exclusively on bluebottles, *Physalia utriculus*, but is immune to their venomous stinging nematocysts. In fact, it can store the stingers and use them in its own defence.

COMPILED BY MELISSA MURRAY

This sea lizard, *Glaucus atlanticus*, is about 5 centimetres long. Photo © David Frewin.

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

A rare colour form of the variable Greengrocer Cicada, *Cyclochila australasiae*. This form lacks the yellow pigment and so appears blue. Children call this one the Blue Moon, but they sound just the same! Photo by Carl Bento.

# SUMMER RACKET



Well the weather is warmer now and already the sounds of croaking frogs, 'cooeing' Koels, chirping crickets and discordant CDs played by rival picnickers fill the air along with the odour of burnt sausages on the barbeque.

As the temperature increases so does the volume – especially when it is added to by those other summer songsters, the cicadas. Why do they all do it then?

I can't speak for the picnickers, but many other animals depend on the noises they make for their continued existence. They breed in warmer weather because food is more abundant, life is easier and survival more likely for youngsters. Adult birds and insects frantically try to find suitable mates while they can and get their reproduction underway before the cooler – and potentially lethal – seasons of autumn and winter.

In most species the females are the choosy ones and the males are the ones being chosen. For them, it pays to advertise and stand out from the crowd.

The options are limited but include having bright colours for visibility – with the drawback that predators can find you just as readily as can your potential mates. Another is territoriality, where you fight off rivals to prove to the females how strong you are. If successful, you'll have an attractive patch of resources for you, your mate and potential offspring, but then have to keep up the fight all season long and be constantly challenged by rivals.

Or you can sing loudly with complex songs to indicate how fit you are. This has the same disadvantage as bright colours (allowing predators to locate you), but the advantage is, it can make you seem even more attractive – strong yet nimble, an excellent choice of mate.

Several species of songsters form groups or choruses so that the females can compare the different males side by side and pick the one they like best. Cicada choruses, where the deafening sound of hundreds of males all shrieking together in a few adjacent trees, has a further advantage of being so unpleasantly loud that it deters many predators from coming close.

Some use a combination of attributes to make themselves attractive, which has the further advantage in the mating game of indicating just how adaptable and versatile they are.

So all you singles out there looking for a mate – forget online dating. Instead, put on your bright colours, limber up those vocal chords and give us a song!

#### WEBLINK >

Find out more about the Greengrocer at [www.australianmuseum.net.au/Greengrocer](http://www.australianmuseum.net.au/Greengrocer)

# FINDING NEMO?

Young Threadfin Butterflyfish, *Chaetodon auriga*, sometimes hitch a ride on the East Australian Current from tropical reefs to Sydney Harbour. Photo © Erik Schlögl.



Each summer, Sydney Harbour and the rocky bays along the coast are suddenly populated by the kinds of fishes you're more likely to find on the Great Barrier Reef.

Vibrant yellow Orangeblotch Surgeonfish, *Acanthurus olivaceus*, and the beautiful Threadfin Butterflyfish, *Chaetodon auriga*, are likely visitors. Common Cleanerfish, *Labroides dimidiatus*, may be seen at 'cleaning stations' removing parasites from a temperate clientele of Old Wife, *Enoplosus armatus*, Rock Blackfish, *Girella elevata*, and Snapper, *Pagrus auratus*, while Moorish Idols, *Zanclus cornutus*, and Blue Tangs, *Paracanthurus hepatus*, pick at the pylons around Darling Harbour.

So where does this colourful crew come from, and why do they appear in summer? Well, each year the famous East Australian Current (EAC) brings these and other

unusual tropical visitors from northern reefs to our warmer summer waters. They arrive as larvae (baby fish) in the warm currents, which is a part of the natural dispersal stage for many reef fishes. If they can find a suitable rocky reef habitat with enough food and shelter they settle into one area to grow, and even thrive, taking on their bright adult reef colours.

As summer draws to a close, the smaller reef fishes could never make the long journey back to tropical climes swimming against the EAC – nor is it in their nature to even try. No, with the colder months the smaller summer visitors often die off, to be replaced the following year by the next batch of temporary residents.

But who knows? Before too long, the changing climate and warmer temperatures may allow some of them to apply for permanent residency. And it's worth

recording that the 'Nemo' fish (Clown Anemonefish, *Amphiprion percula*) has not been recorded from Sydney Harbour – yet.

#### WEBLINK >

At last count nearly 600 species of fishes had been recorded from Sydney Harbour. See [www.australianmuseum.net.au/Fishes-of-Sydney-Harbour](http://www.australianmuseum.net.au/Fishes-of-Sydney-Harbour).

Read about current research into changing patterns of fish distribution at [www.sims.org.au/research/current-projects/hitch-hiking-on-the-eac](http://www.sims.org.au/research/current-projects/hitch-hiking-on-the-eac).



# *what's in a name?* **THE ANTHROPOCENE**

PLANET EARTH HAS NEVER BEFORE EXPERIENCED ANYTHING QUITE LIKE THE AGE OF HUMANS, SAYS ECOLOGIST **ALAN JONES**.

Two hundred years ago, humans numbered one billion. Now we are over seven billion and counting. In fact, the scale and impact of the human species is now pushing the boundaries of Earth's ecosystems, leading some to recognise this time period as an epoch in its own right – the Anthropocene.

Geologists divide Planet Earth's 4.54 billion year history into large units of time (super-eons) and progressively smaller units such as periods, eras and epochs. The modern epoch – the Holocene (Greek: 'entirely recent') – spans the past 10,000 years or so, a warm, interglacial period that has favoured the development of agriculture, urbanisation and industrialisation, with exponential growth of human populations and economies.



*“... if warming exceeds four degrees Centigrade, it will be ‘game over’ for life as we know it”*

It’s an interesting fact about exponential growth that it can seem, at first, little different from incremental or linear growth – that is, until the inbuilt momentum of the population escalates markedly, like compound interest. For example, if a population increases at 1% each year, a seemingly small amount, it would double in 70 years, and then double again in the next 70 years, and so on. Economist Thomas Malthus recognised the potential impact of human population growth as long ago as 1798.

Seventy-five years later, scientist Antonio Stoppani wrote of the ‘anthropozoic era’. More recently, American biologist Eugene Stoermer used the term ‘Anthropocene’ (Greek: anthropo – human and cene – new) and it has since been popularised by Nobel laureate Paul Crutzen and others (though it has yet to be formally adopted as a new epoch).



## MEASURING GLOBAL CHANGE

Global changes in the Anthropocene have been extensive, multifaceted and rapid – all of which challenge the ability of Earth's biological and physical systems to survive and adapt to change. Reacting to concerns, the United Nations commissioned the Millennium Ecosystem Assessment (MEA) in which over 1000 leading biologists assessed the status of Earth's ecosystems. Published in 2005, it found that:

*Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, largely to meet rapidly growing demands for food, fresh water, timber, fibre and fuel.*

The UN report documents the extent of changes to the biosphere in this period: the cultivation of one quarter of Earth's terrestrial surface (with the consequent loss of natural vegetation cover); the loss of around 20% of the world's coral reefs and 35% of mangroves; a quadrupling in the volume of water impounded in dams (equivalent to perhaps six times the flows in rivers); and two-to-threefold increases in the flows of key plant nutrients nitrogen and phosphorus.

Such changes have undeniably changed the face of the Earth, causing a substantial and largely irreversible loss of biological diversity; indeed, this loss has been called the sixth major extinction event in Earth's history.

Ecosystems provide life support for humans in the form of numerous, economically valuable services, such as providing fresh water or food. Studies from 1997 valued these services at US\$33 trillion globally – nearly twice the gross world product – while the MEA found that 15 of these ecosystem services are in serious decline, ranging from such essentials as fresh water, fisheries and the purification of air to the regulation of regional and local climate, natural hazards and pests.

We can use indicators other than money to gauge the impact of people on ecosystems. The Living Planet Index is a global biodiversity indicator based on the population trends of numerous marine, freshwater and forest species. In 2006, UNESCO reported that the index had fallen by about 35% for marine ecosystems, 50% for freshwaters and 12% for forests in the 30 years to 1999.

So how much change can Earth's systems stand before they are irreversibly changed? A 2011 study identified planetary boundaries for a number of indicators which, if exceeded, could trigger abrupt, irreversible and catastrophic environmental changes. It estimated that we have already transgressed three such boundaries: climate change, biodiversity loss and the global nitrogen cycle.

Another index, the Human Ecological Footprint, estimates the area of land and water needed to produce the resources we consume and assimilate the wastes we generate. The global footprint has more than doubled since 1966, rising to an unsustainable 150% of Earth's renewable capacity, says the 2010 Living Planet Report. Collectively, these changes are well outside any natural variability. Quite simply, we are causing the planet to move into a different mode of operation.

## THE FUTURE

By 2050 humans could number nine billion, with a projected ecological footprint of between 180% and 220% of the Earth's renewable biological capacity, according to the World Wildlife Fund. That is, humanity would need the capacity of two Earths to provide resources and absorb wastes.

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### Previous page

This view of Earth at night, compiled from over 400 satellite images, graphically shows the extent of urbanisation, a measure of human domination of the planet. Photo © NASA.

*“Humanity’s impact on Earth’s life support system has become comparable to planetary-scale geological processes such as ice ages”*

What would living standards be like then? If everyone were to achieve Western living standards, as many in the world’s developing economies aspire to do, economic output would need to be 60 times today’s level. Given the pressure we’re exerting on global ecosystems and resources, some argue it would be impossible to ‘... bring more than two billion people into the global middle class through the same resource-intensive development model pioneered by North America and Europe’.

But surely the most serious developing threat is anthropogenic climate change, with its dire scenarios for global warming, extreme weather, sea-level rise and oceanic acidification. Climate change scientists warn that if warming exceeds four degrees Centigrade, it will be ‘game over’ for life as we know it, because tipping points and feedback loops would cause negative change to accelerate out of control exceeding the ability of humans and natural systems to adapt in many parts of the world.

None of this is to deny the positive side to the Anthropocene. Guided by science and technology and driven by human creativity and energy, our exploitation of natural resources has led to massive socio-economic development. For many – but certainly not all – it has brought a dazzling array of benefits in knowledge, health, longevity, education, communications, mobility and entertainment.

Such advances are widely celebrated and are, understandably, sought by those in developing countries. We live in the best of times and the worst of times, concluded the UN Panel on Global Sustainability earlier this year, with much of the world experiencing unprecedented prosperity, while the planet is under unprecedented stress.

#### **PLANET UNDER PRESSURE**

So can we usefully refer to the Anthropocene as a new epoch? The Planet Under Pressure conference held earlier this year in London, UK, thought so. Convened by the UN Global Environmental Change Programmes and the International Council for Science, and attended by nearly 3000 leading experts and decision-makers with a further 3500 online participants, it aimed to assess the state of the planet and explore solutions to impending global crises.

The key message from the conference warned that anthropogenic pressures may cause ‘fundamental changes in the Earth system and move us beyond safe natural boundaries’:

*Humanity’s impact on Earth’s life support system has become comparable to planetary-scale geological processes such as ice ages ... Consensus is growing we have driven the planet into a new epoch, the Anthropocene, in which many of Earth’s system processes are now dominated by human activities.*

If the pre-eminent human goal is sustained quality survival, we must somehow adapt the human growth agenda that underlies the Anthropocene and its planetary-scale biophysical changes, or replace it with new, sustainable values, behaviours, strategies and technologies.

Our challenge is to tame the Anthropocene tiger.

DR ALAN JONES SENIOR FELLOW, AUSTRALIAN MUSEUM

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#### **Further reading**

AD Barnosky et al., 2012. Approaching a state shift in Earth’s biosphere. *Nature* 486: 52–58.

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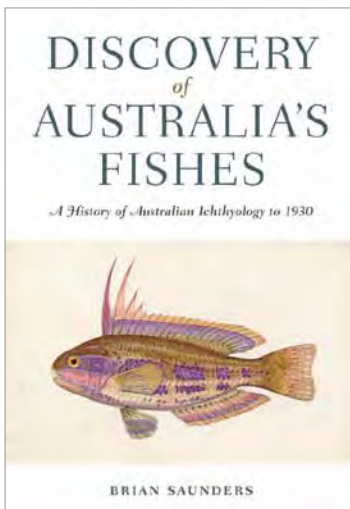
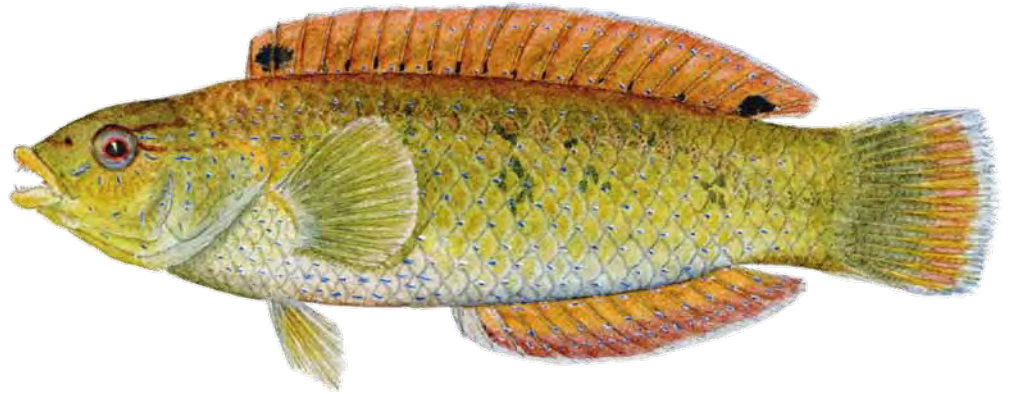
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#### **WEBLINK >**

Let us know your thoughts on the Anthropocene concept at [www.australianmuseum.net.au/blogpost/the-anthropocene](http://www.australianmuseum.net.au/blogpost/the-anthropocene).

# reVIEW



## DISCOVERY OF AUSTRALIA'S FISHES

by Brian Saunders  
CSIRO Publishing, Melbourne 2012

As the late Australian freshwater ecologist Jim Puckridge once remarked, fishes are 'so much more than swimming dinners'. *The Discovery of Australian Fishes* by retired eye surgeon Brian Saunders reveals the truth behind this lament.

Saunders has done a marvellous job, neatly threading together rich chunks of archival material, correspondence, diaries, papers and illustrations (monochromes of people and fishes, and 15 colour plates of fishes) with his wry narrative. It's a scholarly contribution to the history of Australian science viewed through a fish-eye lens.

### Ichthyology down-under

Starting with potted biographies of early natural historians – Ray, Linnaeus and their contemporaries to 1800 – Saunders soon delves into a second phase of ichthyology down-under over the next 70 years. This was an age of discovery, where British, French and American collecting expeditions roamed the world, returning home with their scientific spoils, while collectors in colonial Australia sent specimens by the crate-load to their European colleagues to be described and named.

Most of the book's 520 pages however are devoted to the period 1870 to 1930, dominated by four men: Castelnau, Ogilby, Waite and McCulloch. It was their decades of taxonomic work in describing and illustrating Australian fishes that made it possible for Gilbert Whitley, in 1930, to produce the first comprehensive checklist of Australian fish species.

### McCulloch

Douglas Ogilby and Edgar Waite built solid careers at the Australian Museum before moving on to other museums, yet it was the only workplace Allan McCulloch ever knew. Saunders follows the young McCulloch's career as an ichthyologist, from the 13-year-old Museum volunteer apprenticed to Edgar Waite in 1898 to his final role as Curator of Fishes.

McCulloch, Saunders says, made the greatest contribution of the three to Australian ichthyology and would have achieved much more except for his growing bouts of depression, revealed in his personal correspondence to friends, that led him to take his own life in 1925, aged 40.

### Goal

With the publication of the 1930 checklist of Australian fishes, Whitley fulfilled a posthumous goal for his Museum mentor McCulloch, and the book reaches a natural endpoint of sorts.

In the ensuing 80 years, we've taken ichthyology to new areas of fish biology, ecology and conservation planning – all underpinned by decades of careful observation and taxonomy. And the work must continue – in a hungry future world we're going to need to know all we can about the science of our swimming dinners.

BRENDAN ATKINS

### WEBLINK >

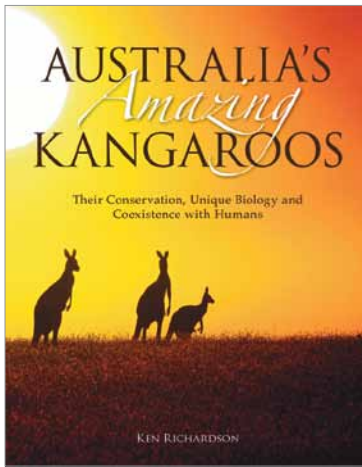
For more information on curators of the Australian Museum Ichthyology Section, visit [www.australianmuseum.net.au/Fish-Section-Staff](http://www.australianmuseum.net.au/Fish-Section-Staff).

### Above

A juvenile Senator Wrasse, *Pictilabus laticlavus*, an early watercolour by Allan McCulloch painted c. 1900. 12 x 6 cm.

The Senator Wrasse changes colour and pattern as it grows to adult size of 30 cm. Australian Museum Archives. AMS136/64





### AUSTRALIA'S AMAZING KANGAROOS

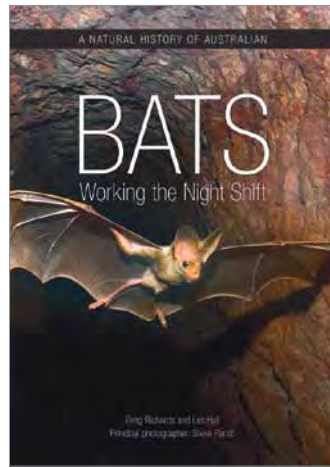
by K Richardson  
CSIRO Publishing, Melbourne 2012

Since kangaroos, wallabies and rat-kangaroos (macropods) are so familiar to Australians, we tend to forget just how extraordinary they really are. *Australia's Amazing Kangaroos* is a book that distils what scientists have learnt about our iconic macropods over the last 200 years or so and presents it in a way that everyone can access, although, inevitably perhaps, oversimplifying some areas.

It summarises their fascinating evolutionary history and details the unique and often-bizarre adaptations for locomotion, digestion and reproduction that have enabled them to be so successful. The book also details the distribution, ecology, behaviour and conservation of the 50 or so species found in Australia, complemented by many splendid photographs.

The final sections of the book handle the often-controversial issue of managing threatened as well as 'overabundant' species in an informative and balanced way. I would recommend this book to anyone interested in Australian fauna and wildlife management or those just wishing to be reminded of just how amazing our marsupials really are.

DR MARK ELDRIDGE



### WORKING THE NIGHT SHIFT

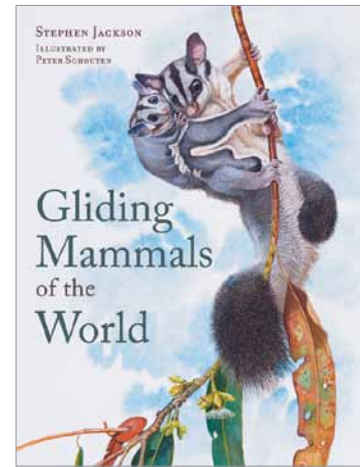
by G Richards, L Hall & S Parish  
CSIRO Publishing, Melbourne, 2012

This is one of the best, all-round introductions to Australia's diverse and under-appreciated bat fauna I've seen. The experience of the authors and high-impact photography by Steve Parish and others combines to produce a rich experience for the reader.

The text is easy to read and the combination of information and photos will appeal to the widest audience of all ages. I particularly liked the chapter *Travelogue*, with a rundown of the bats and their habitats in each major region and capital city. The book also discusses the many ways in which people and humans interact. It's badly needed PR for the embattled bats of Australia, which tend to get bad press rather than thanks for the long-distance pollination and seed dispersal they provide.

I recommend you get a copy – better still, get two and give one to that neighbour who needs to be liberated from the old mindset about bats being dirty, disease ridden vermin. They're not, and this book proves it without a doubt!

DR HARRY PARNABY



### GLIDING MAMMALS OF THE WORLD

by S Jackson, illustrated by P Schouten  
CSIRO Publishing, Melbourne, 2012

What a great book! Gliding mammals are a group of animals related only by their unusual adaptations to the problems of living in trees: the marsupial gliders of Australasia; colugos from the Philippines and South-East Asia; 'flying' squirrels from Europe, USA, Indo-China and Asia; and the scaly-tailed flying squirrels of Africa.

The book introduces their evolution, physical adaptations and behaviours and describes what is known of each species. I was surprised to see how little we know about many of them. This is not a shortcoming of the book – the vast majority live in remote locations and seem to be nocturnal, which means many have been little studied.

Each species account is accompanied by a full-page colour illustration of the species as they would appear in life. The magic of these illustrations, by wildlife artist Peter Schouten, is heightened when you realise that some of the animals are known from single or few specimens collected long ago.

This is a book I would certainly recommend to any naturalist or wildlife artist.

MARTYN ROBINSON

Members receive 10% discount on the cover price of these and other quality publications at the Australian Museum Shop.

# DIGIVOL

## *the rapid digitisation project*

AN INDUSTRIOUS BUZZ HANGS OVER THE UNDERGROUND SANDSTONE ROOM WHERE AN ENTHUSIASTIC CREW OF VOLUNTEERS IS TURNING OLD HANDWRITTEN SPECIMEN LABELS INTO DIGITAL DATA.

The Museum's natural history collections provide a mother lode of scientific information about Australian animal species stretching back 185 years. The science of analysing collection data is called informatics and it's a powerful tool for understanding relationships between organisms and their changing environments.

### INFORMATICS

But what do you do when this crucial data is 'locked up' in handwritten registers and specimen labels?

One solution is to train a volunteer taskforce and give them the resources to do the job. The DigiVol project, conceived and developed by Paul Flemons and the Collection Informatics team at the Museum, has some 70 volunteers who come to the DigiVol laboratory to photograph old specimen labels and archival material using digital cameras.

To date, more than 43,000 images of specimens and their labels have been captured across the Malacology and Entomology collections by the DigiVol crew. They've also digitised more than 60,000 pages of archival material including the Museum's earliest collection registers, Australian Museum reports and magazines and natural history field diaries.

### CROWDSOURCING

But there's still much to do, says Dr Mandy Reid, Collection Manager, Malacology. 'Only about a third of the Malacology Collection has been electronically databased as our resources are limited and it is one of the largest collections in the Museum', she said.

'This project, with its group of skilled volunteers, is helping us make our collection information more widely available to the public, researchers and stakeholders.'

Once the specimens and their labels have been photographed, the information is transcribed into text and placed on a digital database. This stage of the work uses crowdsourcing, where

a group of 'virtual' (online) volunteers work remotely through the Atlas of Living Australia's Biodiversity Volunteer Portal.

Vanessa Finney, Manager Archives and Records, believes that the transcription by online volunteers of handwritten, often difficult-to-read archival material, provides a useful model for other Australian archives.

'These handwritten archives are an important part of national memory and national identity and should be accessible to modern online generations', she said.

### WHO ARE THE VOLUNTEERS?

There is no typical volunteer on this project other than a shared passion to work in a Museum and help unlock its many treasures. They include students, part-time workers and retirees. All undergo an initial period of training and induction from which they emerge as skilled and confident digitisers.

In return for their generous time commitment they get to see behind the scenes and hear about natural history from the scientists and collection managers who visit the lab and oversee the work. Volunteers each like different aspects to the work but overall it's the feeling of participating in a much-needed project that they value most.

LEONIE PRATER WITH RHIANNON STEPHENS DIGITISATION PROJECT OFFICERS

The DigiVol project is expanding and is looking for new willing volunteers. Register your interest at [www.australianmuseum.net.au/Rapiddigitisationproject](http://www.australianmuseum.net.au/Rapiddigitisationproject) and view the image gallery. Or consider becoming an online volunteer at [volunteer.ala.org.au](http://volunteer.ala.org.au).

### Supporting the DigiVol project

A pilot of the DigiVol project was funded by the Atlas of Living Australia and is now expanding thanks to funding from the Australian Museum Foundation. To make a donation to the Foundation, or for more information, please contact the Development Branch on 02 9320 6216.



**Below**

Project Officer Leonie Prater (front) with (L-R) volunteers Megan Edey, Maret Vesik, Paul Flemons (Manager, Collection Informatics Unit), Valerie Collard, Anne Brophy, Fiona Walker, Jon Watkins, Rhiannon Stephens (Project Officer), Bettina Orellana and Beth Rohrlach. Photo by Carl Bento.

**Right**

Labelled specimens in glass vials from the Malacology Collection await photography and digitisation. Photo by Carl Bento.



# INCIDENTAL *images*





This selection of photographs is from Carl Bento, Manager of the Museum's Photography Department. He took them while on the road for other photographic assignments. They really show that great images are there for the taking ... if you remember to pack the camera.

CATE LOWE PHOTO EDITOR

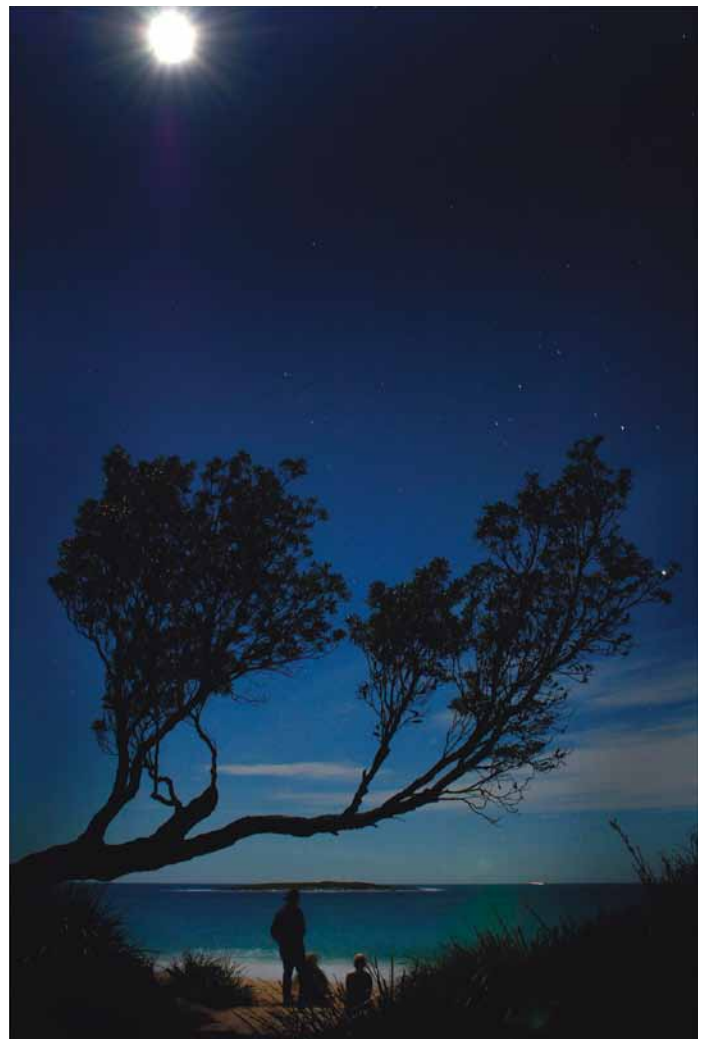


**Left**

We were staying at the Lawn Hill campsite, Riversleigh. I went up to the highest point in the area before sunrise to photograph the surrounding landscape and saw this cairn. It looked as if it was being drawn, like a tide, towards the Moon.

**Right**

I'd just arrived at our campsite on the south coast and saw this silhouette. All photos and captions by Carl Bento.





**Left**

Driving along the road to Mungo in the state's southwest, I was taken by the primary colours of the landscape.

**Below**

Lake Mungo at sunset. The colours and shapes are exaggerated by this light.





It's been a busy 40th anniversary year for Members, full of fun and informative events.

A big thank you for your ongoing support for the Museum through your Membership. We hope you have a safe and enjoyable summer and we wish everyone a peaceful and happy 2013.

**CHANGES**

The Museum is undergoing so many changes, it's hard to keep track, but you'll see the Halstrom Theatre at your next Night Talk with its new seating, audio-visual equipment and a whole new look. Then there's the *Indigenous Australians* gallery, redesigned and rebuilt in consultation with the Indigenous community.

New screens around the Museum are delivering digital signage to highlight our research and collections and various program offers. There's even a new café on Level 2.

**ALEXANDER**

*Alexander the Great* is now showing and we hope you'll make time to experience the exhibition and participate in the program of exhibition-themed events (see [www.alexandersydney.com.au](http://www.alexandersydney.com.au) for details).

Until next year,

**SERENA TODD**

Executive Officer,  
Australian Museum Members

Serena Todd's photo by Carl Bento.

## TRAVEL *with members*



**Night Sky Dreaming with Fred Watson and Ray Norris**

**WHEN** 18–26 March 2013

Gazing up into a million-star sky in outback Australia is sure to take your breath away. Indigenous Australians created stories to make sense of the heavens above and the universe around them. Join Fred Watson and Ray Norris on this ten-day, fully escorted tour through the most indigenously interesting corners of Victoria and New South Wales while unravelling the secrets of astronomy old and new.

**Madagascar: Isle of Biodiversity**

**WHEN** May 2013

Madagascar is a natural history wonderland unlike any other place on Earth. Formerly a landlocked plateau, it became marooned as the ancient landmass of Gondwanaland broke up. Isolated from the African coast by the Mozambique Channel, Madagascar's flora and fauna have evolved in splendid isolation: chameleons, lemurs, rare and

gorgeous birds and a thousand species of orchids are yours to discover in this unforgettable Members tour. See our Members report from Amanda Berry (next page).

**In the footsteps of Alexander the Great**

**WHEN** 29 September – 17 October 2013

For over 2000 years Alexander the Great has excited the imagination of people around the world. Join tour leader Dr Chris Matthew (ACU) for this cultural and archaeological tour as we follow in Alexander's footsteps, exploring the very best of ancient and modern Greece: archaeological sites, museums, mountain scenery and Mediterranean sea views. In Turkey we'll visit the historic cities of Ephesus, Troy and Gallipoli and take time to explore the Grand Bazaar, Topkapi Palace and Blue Mosque in Istanbul.

Visit [www.australianmuseum.net.au/Travel-program](http://www.australianmuseum.net.au/Travel-program) for more information about Members tours.

**Above** Friendly lemurs on Lemur Island near Vakona Forest Lodge. Photo © Amanda Berry.

## reflections on MADAGASCAR

Australian Museum Member Amanda Berry was one of 16 Members to tour Madagascar earlier this year, and she discovered that everything you've heard about this remarkable place is true.

Long before Sir David Attenborough whispered words like 'extraordinary', 'bizarre' and 'unique', I have been curious about the wildlife of Madagascar. Not being particularly brave travellers, we decided that a tour with like-minded Members seemed a sensible way to travel.

### REUNION

Our first overnight stop was St Denis on La Reunion Island, a delightful French outpost on a volcano in the middle of the Indian Ocean, a 12-hour flight from home. Air Austral delivered us to Madagascar's capital the next day. There we met our fun Malagasy guide, Lytah, an impressively trilingual young man, passionate about his country and its wildlife, and our cheerful bus driver, André.

We were also privileged to be accompanied by Dr Steven Goodman, the encyclopaedic,

easygoing American conservation biologist. Steve has lived in Madagascar for more than twenty years. The tour was called 'Madagascar – A World Apart' and it was obvious that we had indeed arrived in a very different place.

### DIVERSITY

In Antananarivo, zebu carts shared the road with ancient, overloaded vehicles. The streets teemed with people pushing wooden trolleys or carrying heavy loads on their heads. We drove through the rice-paddy-fringed capital to the forest at Andasibe and were astonished to see an incredible diversity of lemurs, insects, reptiles, birds and plants.

On some days, it felt like we were observing life from centuries ago, especially during our visit to the silk-weaving village of Soatanana. The Malagasy are hard-working, inventive and skilled, with a literacy rate of around 40 per cent. However, they understand and are worried by the land-use problems in their country.

As we travelled around the island we gained considerable insight into the fascinating culture and beliefs of the 18 different tribes

of Malagasy people, an evolving blend of influences and heritage.

### PATCHWORK

Madagascar is like a giant quilt with unique patches of biologically diverse landscape, soil, climate, vegetation and wildlife. Having seen so much of it, yet cushioned from the harsh reality of Malagasy life, I would describe my experience as 'majestic' (the Tsaranoro Valley is a spectacular place), 'ephemeral' (much of what is precious is hanging by a thread), and 'beguiling'.

In one way or another, Madagascar had charmed and delighted us all. Sir David can use these words for his next documentary, if he likes.

AMANDA BERRY AUSTRALIAN MUSEUM MEMBER

### WEBLINK >

Read the full version of Amanda's story and see more photos at [www.australianmuseum.net.au/blogpost/Science-Bytes/Reflections-on-Madagascar](http://www.australianmuseum.net.au/blogpost/Science-Bytes/Reflections-on-Madagascar)

Don't miss the next Members tour to Madagascar: **Isle of Biodiversity! Details, previous page.**



This male Parson's Chameleon, *Calumma parsonii*, can grow to 65 centimetres. Photo © Amanda Berry.



Scan this code to your mobile device to find all Members events



# alexander lectures

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## Alexander the Great: The man, the myth, the mystery

Enhance your experience of the *Alexander the Great, 2000 years of Treasures* exhibition with these fascinating lectures from leading authorities.

**TIME** 6.30–8 pm

**COST: SERIES** (9 lectures)

**Series sold out**

Tickets for single lectures still available

**SINGLE LECTURES** Members \$20, non-Members \$30 (unless otherwise indicated)

**BOOKING** Phone 9320 6225 or [www.australianmuseum.net.au/Members](http://www.australianmuseum.net.au/Members)

Visit our website for more information.

## Alexander the Great: an audience with the curator

Dr Anna Trofimova, State Hermitage and Liz Cowell, Australian Museum

**WHEN** Wednesday 16 January

**COST** Members \$30 non-Members \$40 (includes exclusive exhibition viewing from 5.30 to 6.30 pm)

This exciting lecture series kicks off with exclusive time in our *Alexander the Great: 2000 years of Treasures* exhibition (from 5.30 pm) and refreshments. Then Director Frank Howarth introduces a lecture from curators Liz Cowell (Australian Museum) and Dr Anna Trofimova (State Hermitage, St Petersburg).

## The Macedonian background and Alexander's life till his accession

Professor Bob Milns AM, University of Queensland

**WHEN** Thursday 31 January

Professor Bob Milns AM looks at the growth of Macedonia under King Philip II, Alexander's father, to 'superpower' status in the Balkans. He describes the relationship between Alexander and his father and mother, Olympias, with other major influences on his development until his accession following Philip's assassination in 336 BC.

## Not so alone – Alexander's nearest and dearest

Dr Elizabeth Baynham, University of Newcastle

**WHEN** Thursday 7 February

Who were Alexander's nearest and dearest?

Elizabeth Baynham uncovers the characters and careers of the men and women who were personally close to the Macedonian conqueror: his mother, powerful mother figures, his wives and his male lovers and cherished friends. Discover the select few who enjoyed Alexander's intimacy and love.

## The evolution of Hellenistic warfare

Dr Christopher Matthew, Australian Catholic University

**WHEN** Thursday 14 February

The Hellenistic way of war was a true innovation, changing the face of warfare in the ancient world forever. Christopher Matthew examines how such a revolutionary form of warfare came into being, who created it, what it involved and how this style of combat came to dominate the eastern Mediterranean world for nearly 300 years.

## Alexander the Great in India (Pakistan and Afghanistan)

Professor Paul McKechnie, Macquarie University

**WHEN** Thursday 21 February

Discover Alexander's great campaign taking in Taxila, the Hydaspes and Hyphasis rivers and his journey down the Indus river to Patala (north-west of Hyderabad) where in 325 BC he turned west for the desert march back into Iran. Professor Paul McKechnie discusses each phase of the campaign and Alexander's lasting impact on India.

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## MORE ALEXANDER!

These Alexander-themed events provide just a glimpse of what's to come, from public programs to school resources. Get the whole picture at [www.alexandersydney.com.au](http://www.alexandersydney.com.au).

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## MEMBERS DISCOUNT CODE

Book your discounted Members tickets to *Alexander the Great: 2000 years of treasures* at [www.alexandersydney.com.au](http://www.alexandersydney.com.au) and when prompted enter the code word 'classical'.

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## East and West before, during and after Alexander

Professor Margaret Miller, University of Sydney

**WHEN** Thursday 28 February

Professor Miller discusses how Alexander's conquest of the Persian Empire added a new chapter to what was already a long story of fruitful exchange between West Asia and the Mediterranean world. Through the riches of the Hermitage Collection, Professor Miller shows how ancient peoples learned from each other.

## Alexander the Great or Alexander the Lucky?

Dr Chris Forbes, Macquarie University

**WHEN** Thursday 7 March

Alexander's remarkable achievements created a cult of personality that has lasted to our own time. But voices were soon to argue that what rules humanity's fate is no more or less than luck. Let Chris Forbes take you through ancient literature to decide on Alexander's achievements: ability or luck?

## Imagining the divine Alexander

Dr Kenneth Sheedy, Macquarie University

**WHEN** Thursday 14 March

Alexander seems not to have portrayed himself as divine, though this did not stop contemporary artists from suggesting such qualities. But after his death, many portraits appeared in which his divinity was recognised. Dr Kenneth Sheedy examines how this was constructed and how it was influenced by the power struggles among his successors.

## Alexander in popular culture

Dr Craig Barker, Sydney University

**WHEN** Thursday 21 March

The exploits of Alexander the Great fascinated and inspired the ancients. Positive or negative, god or demon, Alexander appears in the Bible, the Qu'ran and other ancient texts. He is depicted in modern historical fiction novels, films, plays, television, literature – and museum exhibitions. Dr Craig Barker discusses why the popularity and interest in Alexander has not dimmed in the modern world.

## special events

### Sleepover: Heroes and heroines of the ancient world

**WHEN** 1–2 February 2013

**COST** Members: adults \$120, children \$150  
non-Members: adults \$140, children \$180

**AGES** 5–12 years

Are you a hero or heroine like Alexander the Great? Come to the Museum for a special pizza dinner, make a sword, tour the Museum by torchlight including entry to the Alexander the Great: 2000 years of treasures exhibition, watch a DVD with friends and then catch some ZZZs in Australia's oldest Museum! Why not dress as your favourite hero or heroine from the ancient world?

#### WEBLINK >

For the complete program of Alexander-themed events, go to [www.australianmuseum.net.au/alexander-program](http://www.australianmuseum.net.au/alexander-program).



Scan this code to your mobile device to find all Members events

#### Below

Aaron is ready to join Alexander's army.  
Photo © Sarah Lee.

#### Below right

The Gonzaga Cameo.  
Portrait of Ptolemy II Philadelphus and his wife Arsinoe II.  
Photo © The State Hermitage, St Petersburg.



## adventurous walks

### ALL WALKS

**COST** Members \$15, non-Members \$20

**BOOKING** Phone 9320 6225, or  
[www.australianmuseum.net.au/Members](http://www.australianmuseum.net.au/Members)

### Historic Willoughby

**WHEN** Wednesday 20 February 2013

As the summer months draw to a close, take this opportunity to get out while the days are still warm and discover the wonderful suburb of Willoughby with walk leader Keith Robinson. Highlights of this leisurely walking tour include the Willoughby Arts Centre, an Armenian church, the historic Laurel Bank cottage and much more.

### Earlwood – Sydney's 'Little Greece'

**WHEN** Wednesday 20 March 2013

Join walk leader Keith Robinson on a tour of the inner-western Sydney suburb of Earlwood. Since the 1960s, the area has been strongly associated with Greece and Greek culture, and the tour highlights reflect this. Tour the local public school, Our Lady of Lourdes Grotto; visit a local Greek cake shop, and stop for lunch on Nanny Goat Hill.

### Gift suggestion

### Alexander the Great Gift Membership Package

The perfect gift idea is here!

Spoil your partner, family or friends (not to mention yourself!) with an Alexander the Great Gift Membership Package:

- > anytime\* tickets to the most prestigious exhibition in town
- > a copy of the *Alexander the Great* exhibition catalogue
- > 12-month Membership (with all its many benefits)
- ... all at a very special price!

The package also includes free passes to one of our fascinating Night Talks, a subscription to *Explore* magazine and the option of a personalised gift card to your recipient.

Choose from our range of Alexander the Great packages:

**Family Package** (2 adults and 2 children): \$115  
**Dual Package** (2 adults living at the same address): \$115

**Single Package** (1 adult): \$97

To arrange your Alexander the Great Gift Membership Package telephone Members on 02 9320 6225.

\*anytime tickets entitle you to enter the *Alexander the Great: 2000 years of treasures* exhibition on any day, at any time – no need to book!

**Family Package** – receive 2 adults and 2 children's anytime tickets.

**Dual Package** – receive 2 adult anytime tickets.

**Single package** – receive 1 adult anytime ticket.



AUSTRALIAN MUSEUM MEMBERS SINCE 1972, SUPPORTING AUSTRALIA'S FIRST MUSEUM

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## SEASON'S GREETINGS

WE WISH ALL OUR READERS A SAFE AND  
HAPPY SUMMER HOLIDAY!

Australian Museum

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Find out what's on during the school holidays  
at [www.australianmuseum.net.au/whatson](http://www.australianmuseum.net.au/whatson)

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*Alexander the Great*  
is in the house! Byron  
Luidens finishes  
mounting an exhibition  
mural. Story, page 4.  
Photo by Amanda Teer.

## EXPLORE

Volume 34, 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.

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We welcome your feedback, comments and enquiries.  
Email the Editor at [explore@austmus.gov.au](mailto:explore@austmus.gov.au)

Frank Howarth's photo by Carl Bento

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t 02 9320 6000 (switch)  
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[www.australianmuseum.net.au](http://www.australianmuseum.net.au)

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[www.youtube.com/austmus](http://www.youtube.com/austmus)

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*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.*



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.



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## GIFTS TO COLLECTIONS

Steven and Janine Avery  
Ursula Burgoyne  
Louise and Sam Dawson  
Rod and Robyn Dent in honour of the late Pat Dent and the Wanindilyaugwa tribe  
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