

Australian Age of
Dinosaurs

museum
newsletter

March 2021, Issue 37



DIAMANTINASAURUS MATILDAE'S

BRAIN- CASE

Issue 37, March 2021

NEWS FROM THE JUMP-UP

New Laboratory Co-ordinator

Samantha Rigby began working at the Museum in 2018 as a Tour Guide/Dinosaur Stampede Caretaker. However, after showing unbridled passion and enthusiasm for the Museum's fossils and Laboratory, in February, Sam was appointed Laboratory Co-ordinator/Tour Guide.

As part of her new duties, Sam will be digitalising the Museum's extensive fossil documentation. The process will ensure all specimens can be easily accessed while bringing the Laboratory in line with the Museum's paperless work-place initiative.



International Women's Day

On 6 March women from across the Winton Shire gathered to celebrate women's achievements, encourage connection, develop resilience and raise awareness about women's equality. The International Women's Day event began at Dinosaur

Canyon Outpost and continued into the night at the North Gregory Hotel. Thank you to all attendees and organisers for making this year's International Women's Day such a positive and beautiful occasion.

IS YOUR MEMBERSHIP **CURRENT?**

While many members are up to date with their membership fees, to ensure you do not miss out on the next AAOD Journal and another year of quarterly newsletters, please check your membership status [here](#).

The future has never
looked **brighter**

A large green dinosaur statue, possibly a Tyrannosaurus Rex, stands in a desert landscape under a starry night sky. The Milky Way is visible in the background. The dinosaur is positioned in the lower half of the frame, facing right. The sky is filled with stars and the Milky Way, creating a dramatic and futuristic atmosphere.

Renew now

Help us to **preserve** Australia's unique natural history

PLEISTOCENE TREASURES

By Trish Sloan

The Cenozoic Era extends from 66 million years ago to the present day and is commonly referred to as the *Age of Mammals*, due to the great diversity and abundance of their fossils. Within the Cenozoic Era are the Paleogene, Neogene and Quaternary periods. The Quaternary Period includes the Pleistocene Epoch that lasted from around 2,580,000 to 11,700 years ago.

The most prominent extinction event of the Pleistocene occurred around 129,000 years ago and is marked by the widespread extinction of species without ecological successors, such as Australia's megafauna species.

While Australia has an abundant megafauna record dating back to around 2.5 million years ago, by around 30,000 years ago most

megafauna on the Australian mainland had become extinct.

While megafauna often conjure up images of overgrown goannas (*Varanus priscus*), marsupial lions (*Thylacoleo carnifex*), large Tasmanian devils (*Sarcophilus laniarius*), wombats (*Diprotodon optatum*) and kangaroos (*Procoptodon williamsi*), the term also relates to smaller varieties of marsupials, such as the southern brown bandicoot (*Isodon obesulus*) and the Eastern bettong (*Bettongia gaimardi*).

Similar to dinosaur fossils, megafauna fossils suggest these animals once dominated Australia and are an important chapter within Australia's past, represented through the Museum's *Australia Through Time* collection.

Giant Tasmanian devil
Sarcophilus laniarius

Maxilla fragment from
Red-naped Cave, NSW

1cm



Diprotodon optatum

1cm

Partial jaw
fragment from
northwest Qld



Marsupial lion
Thylacoleo carnifex



Skeletal cast from
Naracoorte Caves, SA

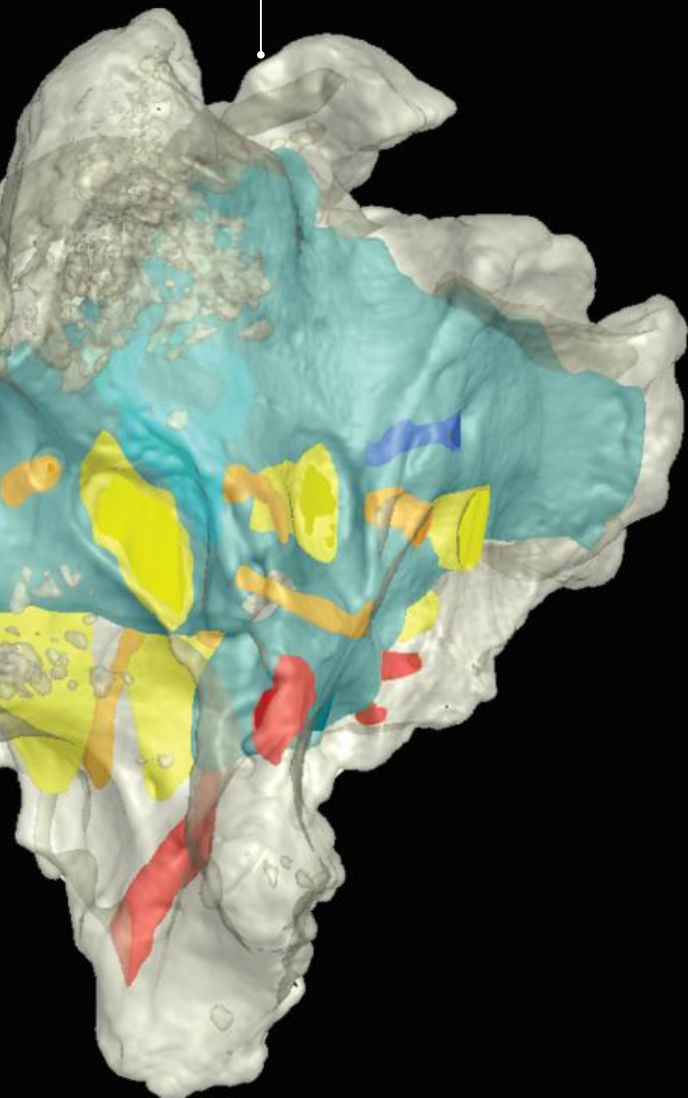


DIAMANTINASAURUS MATILDAE'S

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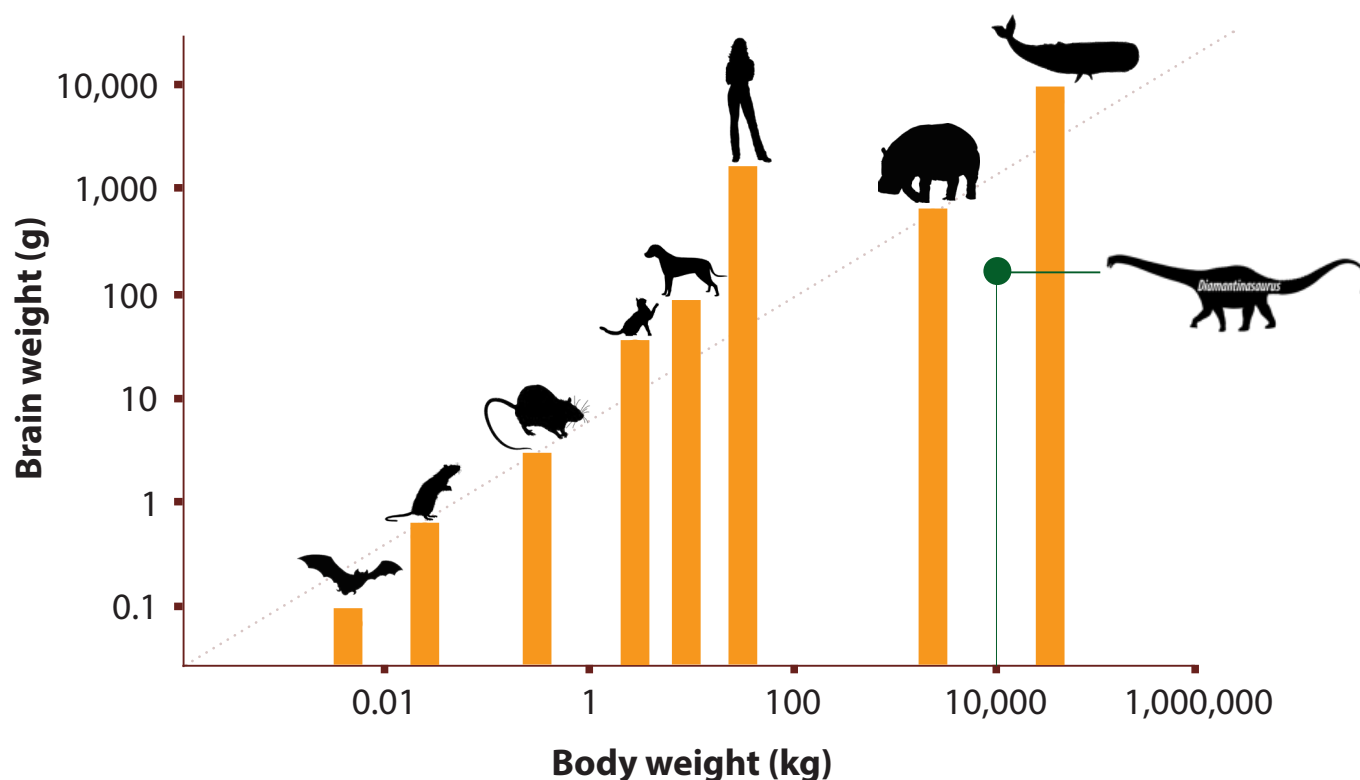


Three-dimensional digital reconstruction of the endocast and volume rendering of the braincase from *Diamantinasaurus matildae*.



The titanosaurian sauropod dinosaur *Diamantinasaurus matildae* is represented by two individuals from the Winton Formation: Matilda and Alex. While Matilda, the type specimen of *Diamantinasaurus*, has been described in detail, Alex, the paratype sauropod, was only fully described in January.

The focus of the study published by the *Zoological Journal of the Linnean Society* was the sauropod's partial skull and braincase. Using computerised tomographic scans to reconstruct the brain cavity of the sauropod, my research colleague Martin Kundrát and I discovered the brain was not big in absolute terms. The volume of the sauropod's cranial capacity was around 200ml, the equivalent in size to a baseball. While this does not sound very small it only makes up 0.002% of Alex's body mass (10,000kg), assuming the density of the brain is equivalent to water. Comparatively, humans have an average cranial capacity of 1,350ml and an average body mass of 62kg. Thus, the human brain represents around 2% of a person's overall body mass – three orders of magnitude greater than in Alex!



The brain and body mass ratio of several mammal species compared with *Diamantinasaurus*. As neurons have a relative constant size and the size of many brain pathways are independent of body size, these indices do not indicate intelligence.

Despite their relatively small brains, sauropods, as a group, thrived for more than 130 million years. As such, perhaps dinosaurs were more like birds than their mammalian counterparts, packing neurons into smaller spaces so that their overall brain size is not the best determinant of brainpower.

Alex was found to belong to the *Diamantinasaurus* genus after lengthy comparisons with similar bones from the type specimens of *Diamantinasaurus*, *Savannasaurus* and *Wintonotitan*. Careful comparison of these bones (particularly those from the shoulder and pelvic girdles) showed that Alex was a *Diamantinasaurus*. By studying Alex, we were able to determine what the back of *Diamantinasaurus*'s head, and parts of its neck and back would have looked like. Crucially, other bones from

Alex – like the skull bones – have not been found in any other Australian sauropod specimen that has been described to date.

However, Alex does overlap significantly with other undescribed specimens, notably Ann, which preserves a more complete skull, and Judy, the most complete sauropod ever found in Australia. In the future the well-preserved neck vertebrae of Judy will be instrumental in placing the few neck and back vertebrae from Alex into their proper places.

Between the four specimens of *Diamantinasaurus* – Matilda, Alex, Judy and Ann – it will soon be possible to almost completely reconstruct the skeleton of *Diamantinasaurus*.

To read the full paper online, click [here](#).

Diamantinasaurus matildae
braincase in posterior view.





Bob, David and Anna covering the dirt surrounding the sauropod trackway with a layer of concrete.

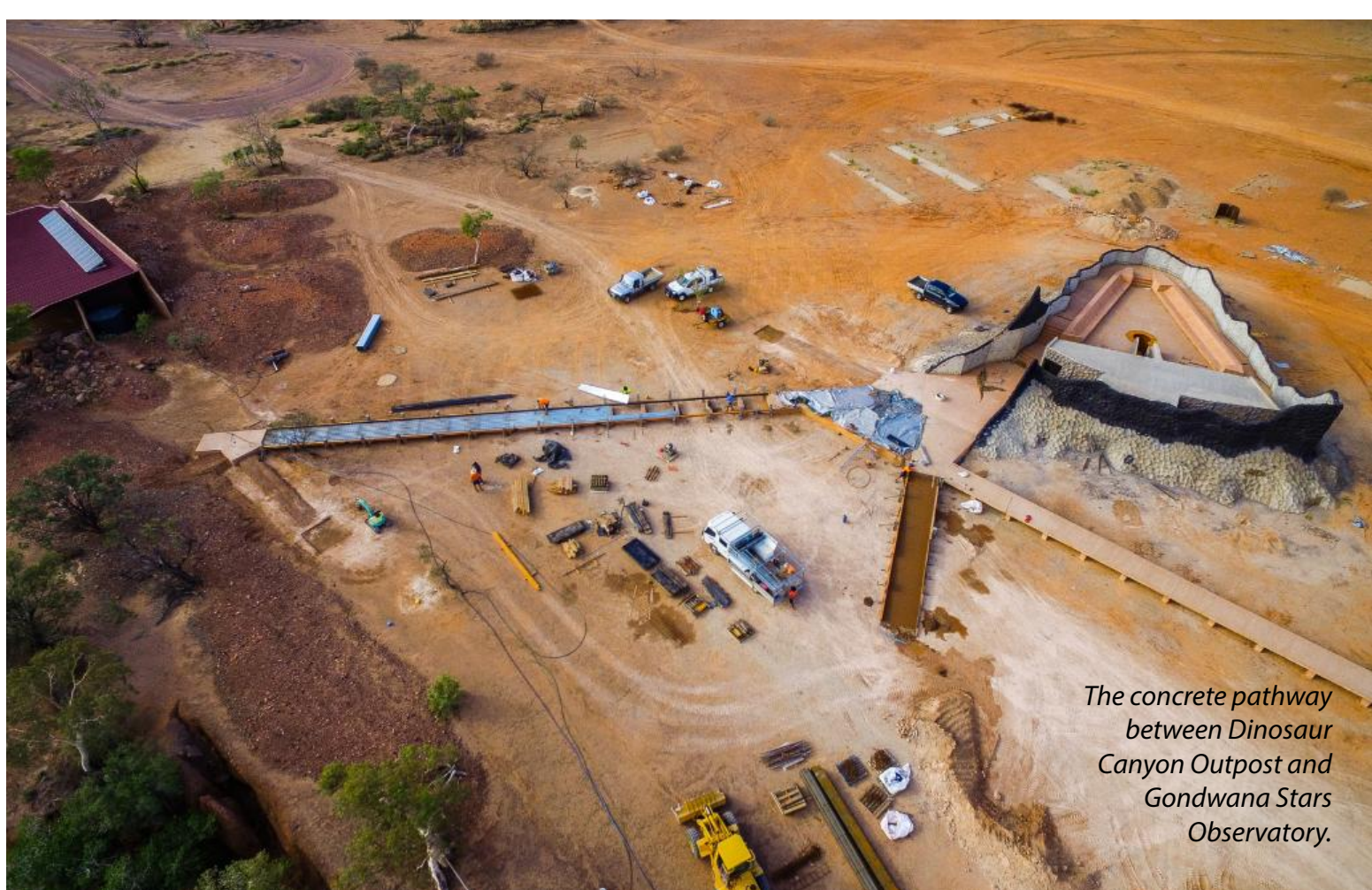
UPDATE ON THE DYNAMIC DESTINATION PROJECT

Since December the Dynamic Destination project team have been busily preparing for its official grand opening on 8 May 2021.

It's been a hectic time. The final jet-black render to the meteorite-textured walls of the Gondwana Stars Observatory are underway and will hopefully be completed by the end of April. The JT Cox concreting crew completed the concrete deck and seating inside the *March of the Titanosaurs* exhibition and the outdoor concreted seating, wheelchair ramps, stairways and over 100 metres of elevated concrete pathways between the new buildings and Dinosaur Canyon Outpost.

In the last three months the installation of the air-conditioners and solar panels at the *March of the Titanosaurs* has been completed and nine tonnes of glass wall panels are now almost installed. There are a million and one little jobs left to do – and a few big jobs too – but we will get there!

For more up-to-date coverage on the Dynamic Destination project, follow and like the Museum's [Facebook](#) page.



*The concrete pathway
between Dinosaur
Canyon Outpost and
Gondwana Stars
Observatory.*



*The concreted seating,
wheelchair ramps, stairways
and over 100 metres of
elevated pathways between
the new buildings and
Dinosaur Canyon Outpost.*

You're invited to attend the FREE

PUBLIC AND OFFICIAL GRAND OPENING EVENT

**OF THE DYNAMIC DESTINATION PROJECT
at the Australian Age of Dinosaurs Museum**

.....

Includes a walk through the Museum's new facilities:
the *March of the Titanosaurs* exhibition and Gondwana
Stars Observatory.

8 MAY 2021 AT 10.30AM ON THE JUMP-UP





Photos Alex Hitchin

EASTERN HOODED SCALY-FOOT

Snake mimic!

Pygopus schraderi

At first glance the eastern hooded scaly-foot looks like a snake, but it is in fact a species of flap-footed lizard. This particular legless lizard is small, in comparison with other *Pygopus* species, only growing up to around 48cm long.

There are two notable features that can be used to identify the eastern hooded scaly-foot from a snake: their legs look like flaps, which are positioned towards the middle of their bodies, and they don't have any ears. Also interesting is that they are known to mimic snake behaviour when threatened. Often they will let out loud, harsh squeaking sounds, rear up and flick their tongues just like a venomous snake.

These reptiles are nocturnal but sometimes they can be seen hunting during the day. Like all reptiles, the eastern hooded scaly-foot hibernates during winter.

LABORATORY UPDATE

2021: PROGRESS REPORT

Over the last three months progress has continued on the Judy site material with work being focused on the cervical and dorsal vertebrae. At the same time the one and only Ian-site jacket was opened for preparation. This jacket contains one of the best preserved sauropod scapulas in the Museum collection. The jacket also

contains a partial coracoid. Ordinarily, a large sauropod bone would take at least a few months to prepare but this specimen is so well preserved the work has only taken two weeks.

The Fossil Preparation Laboratory team thank Jim and Maxine MacMillan for their donation of magnifying lamps and two comfortable chairs for the Laboratory.



GORDO the GUARDIAN



\$24.95
+p/h

*On a towering mesa in the museum up there,
stood a group of statues in the warm Outback air.
One little statue, tired of his view, desperately
wanted to see something new.
His name was Gordo and out in the dark, he made
a wish he could walk through the park.*

Gordo the Guardian, a night-time adventure is a beautiful rhyming story that features the adorable dinosaur Gordo on a trip around the Australian Age of Dinosaurs Museum as he attempts to escape a very large and scary meat-eating dinosaur...

This is Gordo's debut book and will find its way into the hearts and bedtimes of generations of children. No home should be without *Gordo the Guardian!*

By Inge Daniels. Hardback/ 28 pages. Printed in Australia.

.....

About the author

Inge was born in Lierop, a small village in the Netherlands. After ten years of working as a graphic designer in Amsterdam and Melbourne she realised her dream of publishing a picture book. *Gordo the Guardian, a night-time adventure* is Inge's debut author-illustrator picture book. She currently works and lives in Melbourne, Australia.

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A portion of the proceeds from the sale of this book will be donated to the Peter MacCallum Cancer Foundation.

AVAILABLE ONLINE



Supporting a
lasting legacy
to Australia's
natural heritage.

PHOTO TRISH SLOAN

THE AAOD LEGACY FUND

was established to build an investment portfolio that will provide ongoing and permanent income for operations and development of the Australian Age of Dinosaurs Museum of Natural History.

Tax-deductible donations are a great way to contribute to a worthy cause. Every time you make a gift to the AAOD Legacy Fund, provided your donation is \$2 or more, you will most likely be able to claim the full amount of your charitable donation on your tax return (check with the ATO if you are unsure). The AAOD Legacy Fund relies on the generosity of Museum supporters to ensure a lasting legacy to Australia's natural heritage.

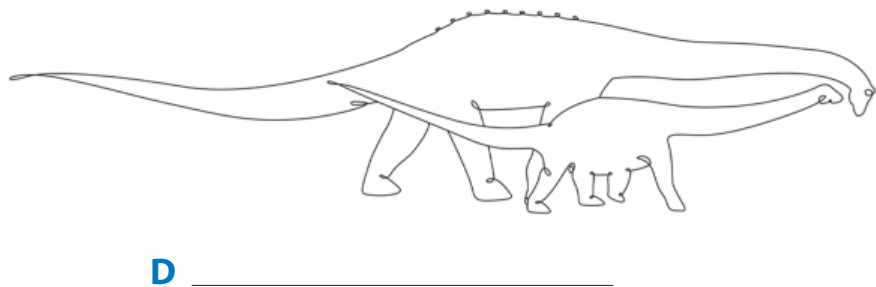
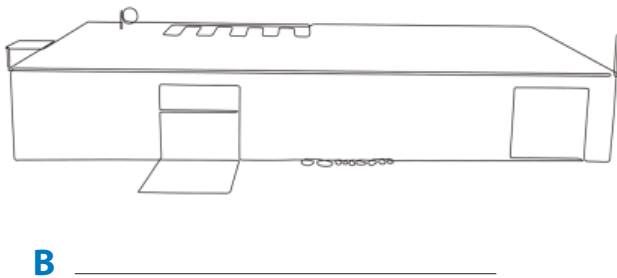
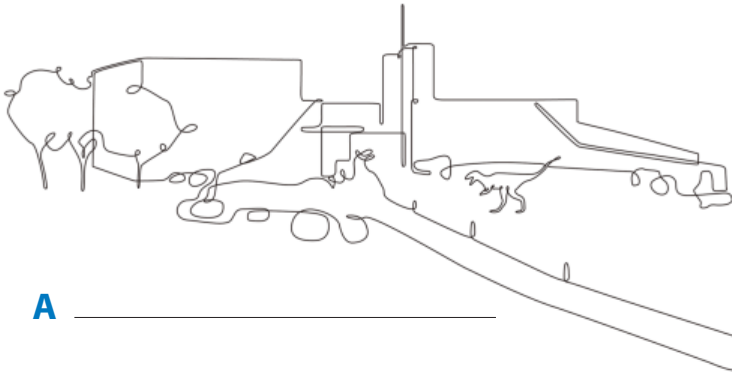
To donate, visit *make a donation* and select [AAOD Legacy Fund](#).

PALAEO PETE FUN



HOW WELL DO YOU KNOW THE MUSEUM?

Can you name all the **exhibits** and **buildings** below? Once you've labelled everything it's time to **colour in!**



A Reception Centre; **B** Fossil Preparation Laboratory;
C Guardian of the Bridge; **D** March of the *Titanosaurus* exhibition

MUSEUM GUIDES TO AUSTRALIAN NATURAL HISTORY

BIRDS AND DINOSAURS

Folding pocket guides to birds found in the Winton region and Australian dinosaur species. These convenient guides are a portable source of practical information for **ornithologists** and **palaeontologists** of all ages.

\$4.95ea
+p/h

Head to the **Museum Shop**
australianageofdinosaurs.com