Australian Age of Dinosaurs

museum newsletter

March 2019, Issue 29

AUSTRALIA'S BEST-PRESERVED

SAUROPOD TRACKWAY

NEWS FROM THE JUMP-UP

UPDATE ON AAOD JOURNAL, ISSUE 16

The next AAOD Journal, Issue 16, is currently undergoing a redesign. While the content will still feature stories and science relating to Australian natural history, the "look" is subtly changing. To attract new members and keep current members inspired we are creating a journal that is even more beautiful and engaging, and still chock-full of Australian natural history. While we ordinarily send members their Journal in February, this year's Journal is a little late and will be sent in April. Thank you for your patience!

CHURCHILL FELLOWSHIP

In late 2018 post-doctoral researcher Dr Stephen Poropat (Swinburne University of Technology) travelled to Argentina courtesy of The Winston Churchill Memorial Trust of Australia to conduct research on the impact of continental drift and climate change on Southern Hemisphere dinosaur faunas.

Aside from developing a comprehensive understanding of South American and Antarctic non-hadrosaurid ornithopod dinosaur anatomy, Stephen will also use information from the trip in phylogenetic analyses incorporating all known South American, Antarctic and Australian ornithopods, to form the basis for palaeobiogeographic analyses interpreted in the light of palaeo-climatic and palaeo-environmental changes throughout the Cretaceous.

Congratulations, Stephen, on completing this expedition and providing such an in-depth report for others to read. Stephen's full report can be found by clicking here.

Never stop dreaming

Museum membership means subscribing to the acclaimed AAOD Journal. The AAOD Journals are a valuable addition to any library and have quickly become an unmatched repository of Australian palaeontological history.

The next AAOD Journal, Issue 16, will be released in April 2019.

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.

HOW TO RENEW

Online through the Museum shop, select Museum Memberships
Email completed form to
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Mail completed form to
AAOD Members, Australian Age of Dinosaurs PO Box 408 Winton Qld 4735
By telephone 07 4657 0078

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

LABORATORY **UPDATE**

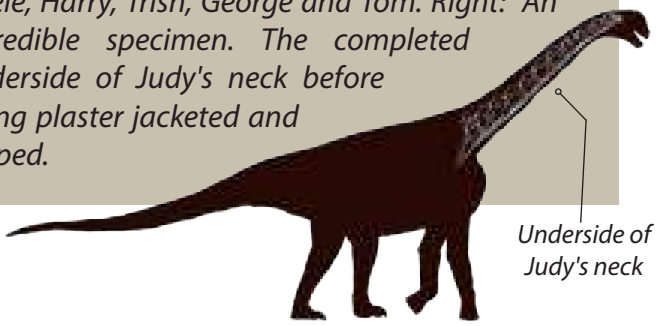
JUDY SITE: PROGRESS REPORT

After almost a year of preparation the underside of Judy's neck was finally completed in February. This fossil is simply breathtaking. All of Judy's cervical ribs are still connected to the neck vertebrae and extend the length of three vertebrae. Sauropod fossils with this level of detail and completeness are rare and its preparation is a credit to our dedicated preparators.

The next step was to prepare the sides and top of the neck. To get to this new section a plaster jacket with steel trusses, to support the weight of the neck, was fashioned. Once the new protective plaster jacket was in place it took a few days to dry before it was ready to be flipped. At over 400kg, many hands were needed to flip the jacket into position on the reinforced plaster base, and work has already begun in earnest to remove the plaster from each side and to prepare the top.

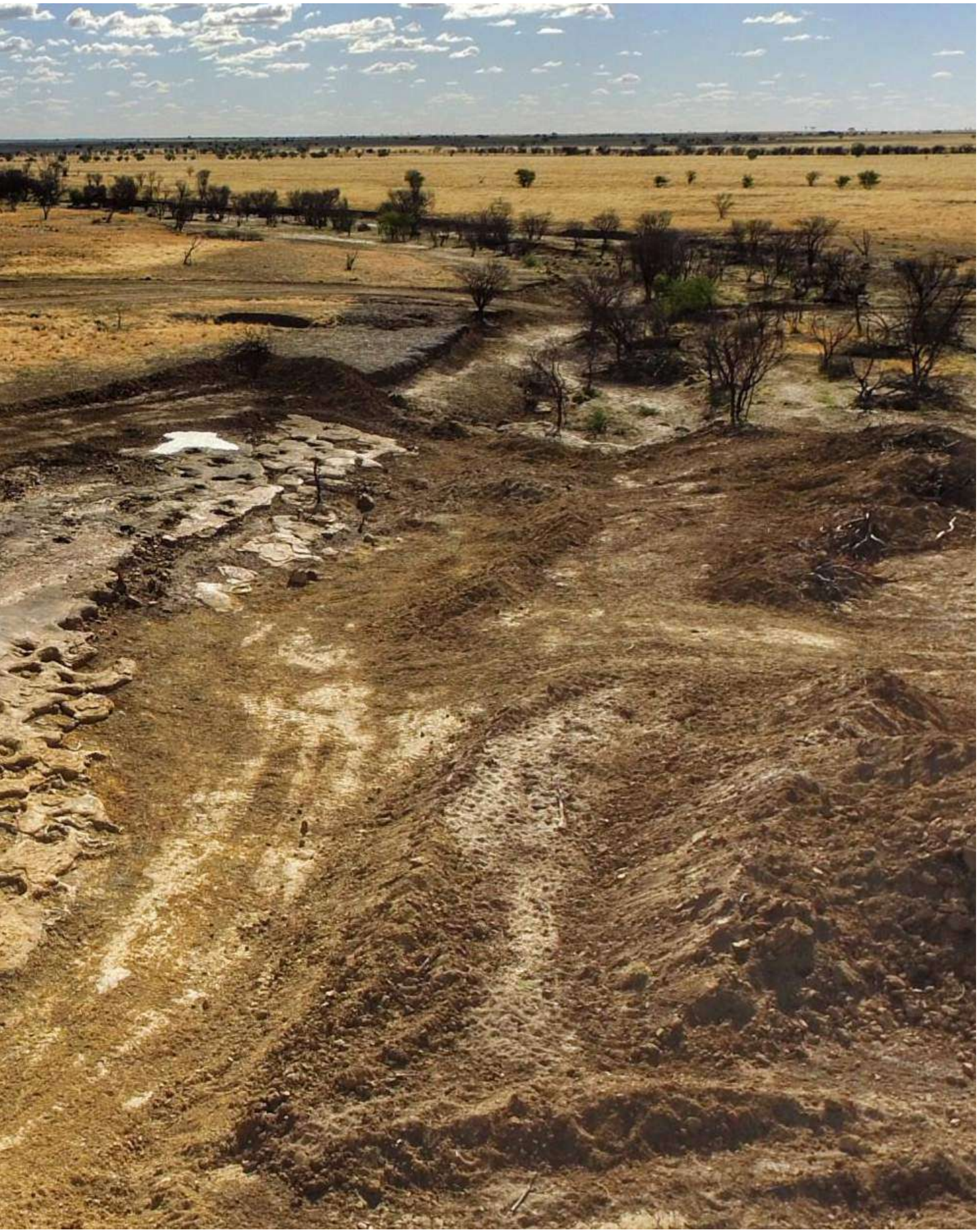
At the dig site, the top half of Judy's neck extended into black soil and suffered some deterioration as a result. Consequently the Laboratory team decided to prepare and mount the complete neck on its side, ensuring that the amazing cervical ribs along the bottom can be viewed by visitors once work on the fossil is complete. In the meantime there is a lot more work to be done!

Left: George uses an angle grinder to open Judy's plaster jacket, once flipped and secured on steel trusses. Below: The flip team, L–R Sam, Grace, Adele, Harry, Trish, George and Tom. Right: An incredible specimen. The completed underside of Judy's neck before being plaster jacketed and flipped.



AUSTRALIA'S BEST-PRESERVED

SAUROPOD TRACKWAY



On Valentine's Day this year the Queensland Minister for Innovation and Tourism Industry Development, the Hon Kate Jones, announced the discovery of Australia's best-preserved sauropod trackway, found on a property west of Winton.

THE DISCOVERY

The trackway was partially exposed during the January 2000 floods when a small creek broke its banks and carved a new channel. Property owner, Mike Elliott, saw large impressions in an exposed rock shelf at the time but didn't initially recognise them as footprints. Over the next sixteen years, until the Museum learnt of their discovery, exposure to the element significantly damage these footprints. This damage included broken and collapsed edges, fragmented surfaces and a section of sauropod trample tracks being completely obliterated by flood waters. The creek was also congested with recently poisoned prickly acacia trees with the trunks of these now-dead trees growing from within the sauropod footprints.

THE EXCAVATION

In early 2018 Museum staff and volunteers began excavating around the footprints. This was done using earthmoving machinery and a blast hose connected to a high-volume air compressor. The blast hose proved to be a valuable tool as it removed the final layer of soil and debris without marking the now-identifiable sauropod trackway surface. The newly uncovered trackway was approximately 10m wide and 55m long. The trackway petered out around one metre below the bottom of the gully at one end, and disappeared at the other end where it came in contact with the upper black-soil layer. The closer to the surface, the more fragile and deteriorated the tracks became.

The trackway section at the bottom of the gully was a trample zone where a number of sauropods had walked. It consisted of large circles of fragile rock (10–20cm high and thick) in soft yellow sandstone and was extremely fragile. Alongside the trample zone was a series of large sauropod footprint sets that led to the weathered section exposed in 2000. These tracks (like

the rest of the trackway) are preserved in a band of rock that varies between 10cm and 30cm thick. Below the rock band is a deposit of soft yellow sandstone soil. Many of the footprints do not have a base but show a detailed outline of the sauropod's foot. Aside from the footprints belonging to an 18m-long sauropod, there are at least two other sauropods that can be identified on the trackway as well as several footprints from small ornithopod and theropod dinosaurs.

PRESERVATION

Due to its fragility and location, the trample zone, which comprises about 20% of the total trackway area, would not survive any further exposure to water or mud. Between June and September 2018 over 400 litres of paraloid (plastic resin dissolved in acetone) was applied to this section to harden it before it was pedestalled, around the rings of rock, and covered with plaster jackets. As this was a massive undertaking, the team from Dinosaur Dreaming (seasoned dinosaur diggers from Victoria) came up to help and, by the end of September, most of the fragile section had been safely removed to The Jump-Up.

The rest of the trample zone was removed over the next three months. By early January 2019 the Museum team was confident that all remaining sections of the trackway would withstand a normal water flow in the creek. As fate would have it, less than three weeks later the property was inundated with over 500mm of rain.

TRANSPORTATION

Given the newly exposed trackway was extremely fragile, removal from the creek bed was a high priority for the Museum. Relocation of the trackway began in September 2018 and the Museum has now removed 25% of the total area, including all the fragile footprints that were in danger of being destroyed.

> "This is a very slow and painstaking process. The total weight of the trackway is in the vicinity of 500 tonnes and we are transporting it back to the Museum, one two-tonne trailer load at a time. Relocation of the trackway is expected to continue through to the end of winter 2019."
>
> **David Elliott OAM**

A scientific analysis of the trackway has been submitted for peer review by Dr Stephen Poropat and his colleagues, and Executive Chairman David Elliott is hoping that the attraction, named March of the Titanosaurs, will be open to the public from May 2020.

SIGNIFICANCE

The discovery is the best-preserved sauropod trackway in Australia and will play a significant role in boosting visitor numbers to Outback Queensland. By carefully transporting the fragile trackway to the Museum it will be able to be studied and viewed for many years to come. The international exposure generated from the discovery will have a significant impact on the Outback tourism economy, including the small town of Winton.

> "We know the people of Winton are doing it tough at the moment and discoveries like this will boost the tourism industry and help the outback economy recover from the recent monsoon."
>
> **Hon Kate Jones**

Australian vertebrate palaeontologist Dr Stephen Poropat of Swinburne University

Above: The trackway in March 2018 prior to cleaning and excavation. The dead trees in the bottom of the creek were growing in sauropod footprints and had numerous roots under the trackway. Below: Judy Elliott searching for missing edges of the trackway. This section was uncovered by floodwaters in 2000 and was very fragmented. The area directly behind Judy was once part of an extended sauropod trample zone that was washed away by floodwaters many years ago. The isolated rock band in this area contains sauropod track under-prints.

Above: The team carefully pedestal around the rings of rock before covering them with plaster jackets. Below: Property owner Mike Elliott uses his tractor to lift and load each trackway section.

of Technology in Melbourne is leading the Museum's research team. Dr Poropat noted that a giant thumb claw is clearly visible on most of the fore feet of the exceptionally well-preserved sauropod footprints and, in some, the impressions of individual toes can be identified.

Dr Poropat said the presence of small ornithopod and theropod tracks at the site was also incredibly rare. The small ornithopod and theropod footprints were clearly made by very similar (if not identical) trackmakers to those preserved at Dinosaur Stampede National Monument, which is located about 100km south of this site.

According to Dr Poropat, the longest sequence of sauropod footprints can be followed continuously for more than 40 metres and would have comprised nearly two dozen fore and hind footprint sets when complete.

> "These footprints are the best of their kind in Australia and their shape can be distinguished from all known sauropod footprints worldwide. The sauropod footprints cannot be assigned to any particular sauropod species despite the fact that there are three different sauropods known from the Winton Formation and that at least one had a thumb claw."
>
> **Dr Stephen Poropat**

Dinosaur Dreaming and Australian Age of Dinosaurs Museum staff with the sauropod trample zone wrapped in plaster jackets ready for removal.

Overhead view of the trackway as the most deteriorated section of the sauropod trample zone was being wrapped in plaster jackets.

Answer: Rock

Judy Elliott adding finishing touches to the sauropod trample zone the day before the discovery was announced.

DINOSAURS IN THE DIGITAL **AGE**

BY KIM STOTER

Sam has been a Museum Tour Guide for the last 12 months. This year, aside from continuing to regale visitors with information about Australian natural history, Sam will also be commencing graduate research studies by undertaking a Master of Science degree. Sam's post-graduate project has been devised to further develop her career in palaeontology while providing her with an opportunity to study the Museum's larger fossils up close.

Sam's project will involve 3D laser scanning of sauropod fossils in the Museum collection to create a digital repository. Each fossil specimen will have its own profile that will contain exact measurements, shapes and dimensions in an easily accessible database. By doing this, a more complete representation of each dinosaur skeleton will be compiled, laying a foundation from which future specimens can be identified. The overall goal of this project is to gain a deeper understanding of the sauropod palaeo-biota within the Winton region during the Cenomanian Stage 95–100 million years ago.

This new digital approach to preserving entire collections for researchers and the general public to view is a popular technique among many major museums around the world. Sam, with support from the Museum, has applied to the Queensland Government's Gambling Community Benefit Funds to acquire a 3D scanner for the Museum. If successful, the Museum will be able to scan and digitise its entire collection, including the recently discovered sauropod trackway (refer to Pages 6–17). Sam's post-graduate project will take her two years to complete, culminating in a thesis paper documenting her findings. The entire Museum team is very excited about the project and we wish her every success.

RAIN ON THE WINTON **PLAINS**

Monsoonal rains in early February meant that Winton, once again, became a temporary Outback island. The town received 229.80mm, Dinosaur Stampede 248mm and the Museum 251mm in 11 days. While this was a lot less than other places further north of Winton, the Museum was closed for two and half days and Winton was completely cut off in all directions. As the rain cleared and the water drained away, The Jump Up was then covered with vibrant colours as the dust washed off the leaves and the plants began to flower.

Even the culverts at the start of Dinosaur Drive became flooded during the February deluge. While the Museum did have to evacuate all staff and visitors, without the new road and culverts it would have been closed for weeks rather than days.

PALAEO PETE FUN

HOW TO PLAY Hidden in the grid are words related to geology. They are all in a straight line and can read up, down, across or diagonally. We've found one to start you off. However, one word in the list is not in the grid. *Can you find which one?*

BASALT
CHALK
CLAY
COAL
~~FLINT~~
GYPSUM
MARBLE
MARL
QUARTZ
ROCK
SILT
SLATE
TUFA

Which word is **missing?**

F	L	I	N	T	C	J	L	F	A
E	U	G	M	J	S	K	X	F	S
C	G	J	Y	A	Q	L	M	T	Y
L	Y	T	Z	P	R	A	A	F	S
A	P	Q	M	B	P	B	R	T	Y
Y	S	B	U	X	A	U	L	A	E
T	U	A	L	A	L	S	M	E	S
U	M	R	O	C	R	P	A	F	I
F	C	H	A	L	K	T	V	L	L
A	D	C	O	A	L	C	Z	C	T

SHEET
BED
MUD
CAP
SHAM

HOW TO PLAY Each word can be paired with the same word (not listed) to make a new word or phrase. *Write the word in the box below:*

Which word **fits?**

Answers on page 16