Australian Age of Dinosaurs

museum newsletter

March 2020, Issue 33

Were **megaratoids** the dominant land predators of Australia during the Cretaceous?

NEW THEROPOD DISCOVERY

NEWS FROM THE JUMP-UP

WINTON HISTORICAL SOCIETY

In 2019 the Museum team raised $531.20 by recycling 5,227 cans, glasses and bottles through the Containers for Change environmental scheme. In January this was donated to The Winton District Historical Society and Museum Inc, at the Waltzing Matilda Centre, for their outstanding contribution to the local community.

Every year the Museum team votes on a different Winton community program or organisation to receive the donation the proceeds from the Containers for Change initiative to. Congratulations to The Winton District Historical Society members for your incredible dedication and passion for local history!

In 2020 the Museum team has voted to donate all funds raised to the Queensland Country Women's Association (Winton branch).

Winton District Historical Society members Helen, Lorraine and Bruce with Museum staff members Grace, Trish and Steve.

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**.

New theropod DISCOVERY

Were **megaratoids** the dominant land predators of Australia during the Cretaceous?

In January the Museum and the University of New England announced the discovery of a theropod dinosaur near Winton. The fossilised bones were recovered from a cattle station located in the northern margins of the Winton Formation, a geological deposit that is approximately 95 million years old.

The small, fragmentary theropod remains were found at the Marilyn site by Bob Elliott on a property 60km northwest of Winton in 2017. Subsequent digging at the site in May 2018 by the Museum recovered approximately fifteen partial limb bones and several vertebrae. The bones were identified as the remains of a medium-sized megaraptorid by Dr Matt White, lead researcher from the University of New England in Armidale.

"Although no well-preserved bones were recovered from below the surface, I was amazed to find it was a theropod, the second to be discovered from the area," said Dr White.

Following examination of the specimens Dr White and his research team were able to identify two incomplete caudal vertebrae, the ends of three metatarsals and the end of a left pedal phalanx. While the fossilised remains were considerably weathered, subsequent preparation and comparative research revealed a close skeletal affinity

AODF0972 distal left pedal phalanx II-1 and AODF0979 distal right metatarsal IV

to Australia's most complete theropod dinosaur, *Australovenator wintonensis*, which was discovered nearby in 2006.

According to Dr White, the new theropod belongs to a group of dinosaurs called megaraptorids, which are carnivorous theropod dinosaurs that are characterised by their serrated, blade-like teeth, huge muscular arms and razor-sharp claws.

"The bones [metatarsal II and IV] discovered are slightly larger than *Australovenator* and show anatomical variations indicating that they may belong to a new species," he said.

> "The Museum has excavated dozens of sauropod sites over the past 17 years and we have found the teeth of theropods at many of them. This indicates that there may have been quite large numbers of theropods like *Australovenator* around at this time."
>
> **David Elliott**

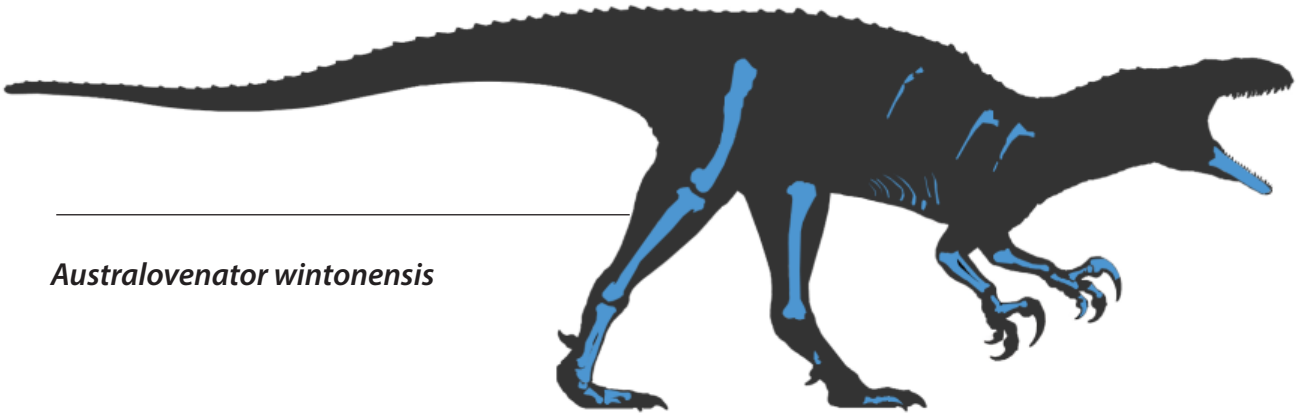
Australian Age of Dinosaurs Museum Founder David Elliott said that although numerous fossils from long-necked, herbivorous sauropod dinosaurs have been discovered in the Winton area, the bones of theropods are extremely rare.

This scarcity of fossil material makes it difficult to determine the descent and relationship of theropods in Australia with any degree of certainty. While at least six Australian non-avian theropod groups have been scientifically described and named these are mostly from single fossil specimens. The only exception, at this stage, is *Australovenator wintonensis*, represented by a partial skeleton – a Megaraptor within Megaraptoridae.

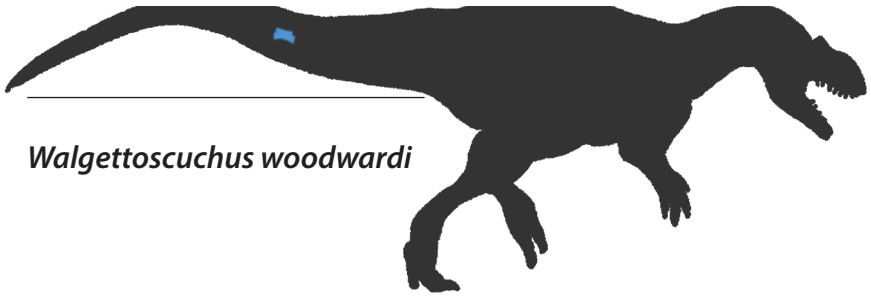
Until more material can be found the fossils discovered at the Marilyn site have been assigned to Megaraptoridae indet.

While Megaraptoridae indet. was probably larger than the holotype of *Australovenator*, the morphological discrepancies between *Australovenator* and the new specimens could represent either variation within the same species or the presence of a completely new species of megaraptorid.

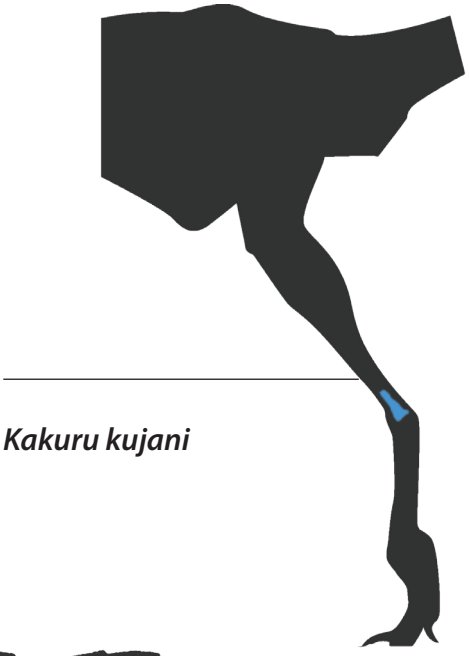
If Megaraptoridae indet. could be proven to be another megaraptoid it would support the recent claims from other researchers that megaraptorids were the dominant predator in many Australian mid-Cretaceous terrestrial ecosystems.



Australovenator wintonensis



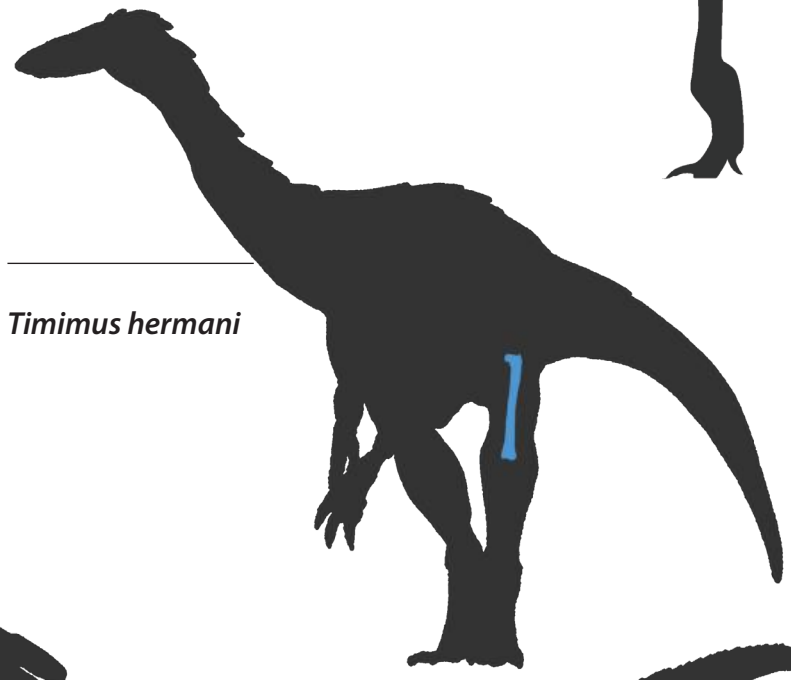
Walgettoscuchus woodwardi



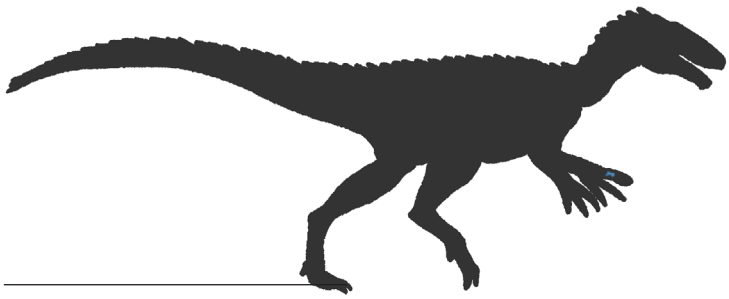
Kakuru kujani

"Although at least six Australian non-avian theropod taxa have been named, most of these are represented by only a single element... These are: *Rapator ornitholestoides*, known only from a metacarpal I; *Walgettosuchus woodwardi*, represented by a partial caudal vertebra; *Kakuru kujani*, restricted to an incomplete tibia; *Timimus hermani*, known only from a femur; and *Ozraptor subotaii*, a distal tibia. The only exception is *Australovenator wintonensis*, represented by a partial skeleton."

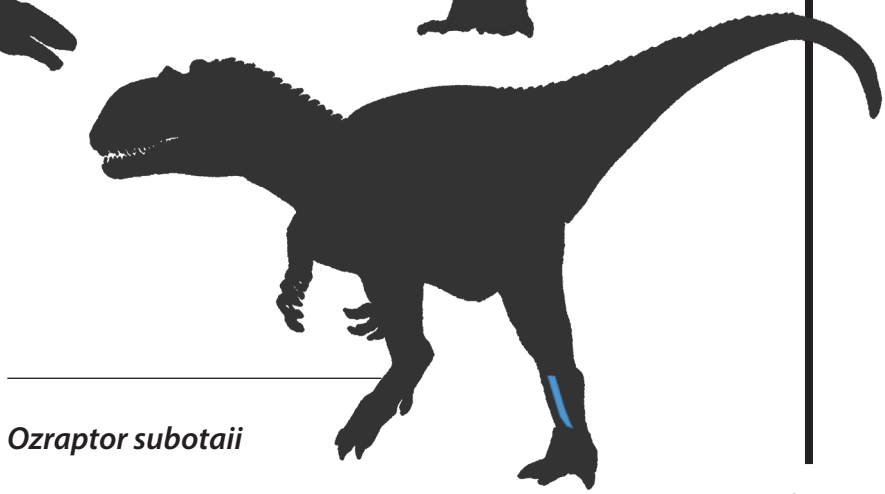
New theropod remains and implications for megaraptorid diversity in the Winton Formation (lower Upper Cretaceous), Queensland, Australia. Royal Society Open Science.



Timimus hermani



Rapator ornitholestoides



Ozraptor subotaii

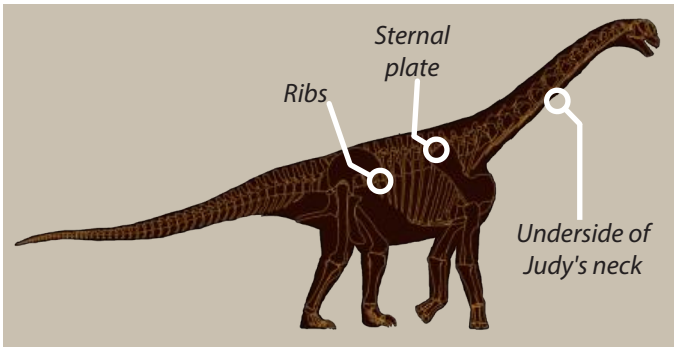
LABORATORY **UPDATE**

2020: PROGRESS REPORT

Over the last few months the Lab team have been preparing specimens for Prep-A-Dino participants to work on throughout the New Year. This has provided the Lab team with the perfect opportunity to open some of the larger plaster jackets that have been waiting in storage. This includes a plaster jacket from the Judy site, containing thoracic fossil material from a sub-adult sauropod. The fossilised bones are sitting on top of each other, making the removal into smaller sections quite difficult. Despite this, the Lab team have isolated two dorsal vertebrae and the sternal plate. Work on the sternal plate has now revealed it to be sitting directly on top of multiple ribs.

Sam (above) working on the Judy site dorsal vertebra. Tom (below) opening the plaster jacket from the Judy site.

Preparation of the cervical vertebrae from the Judy site is going well. Since the vertebrae was flipped last year Prep-A-Dino particpants and staff have slowly revealed more and more of the details of the neck's underside. Honorary Technican Kim (above) has been powering through the preparation .



In February the Museum hosted honours student Andrew Chua (below) from the University of Adelaide. The focus of Andrew's internship was palaeontology. While in the Laboratory Andrew sorted through dried matrix from the Mitchell site, helped with the Museum's collection management and assisted with the preparation of the humerus and rib from the Judy site.

In addition to fossil preparation, the Lab team have also been sieving matrix from the Mitchell site in search of more small teeth and isolated bone fragments. It is a great activity to do when the weather is hot! So far several small isolated teeth have been recovered.

SOLUTIONS TO PALAEO PETE
True or False
True; False; True; True; False; True; False; True; False; False
Mystery word: ***Ferrodraco***

Match it
Milky Way; Solar System; Halley's Comet; White Dwarf; Kuiper Belt; Light Year
Mystery word: Sputnik

SECRETS OF THALLOSE LIVERWORTS

The Jump-Up is an extraordinary wilderness setting filled with some of Australia's most unique flora and fauna. Much of this life on The Jump-Up is sustained by very little rain fall in harsh environmental conditions. After all, how on Earth can anything survive in 46°C heat, especially when food and water sources are few and far between?

As part of the Dinosaurs to Dunnarts program, some of the Museum team took time out to explore The Jump-Up after the recent rain events to record how life was affected by the rainfall. They found something slightly different but remarkably beautiful: Thallose liverworts.

A common liverwort called *Riccia limbata*, approximately 3 to 5mm long, growing in the soft-soil crusts on top of The Jump-Up, *R. Limbata* have a bright green surface when wet and are hairless with purple-to-black scales along the edges. When the green surface dehydrates they fold their leaves in half, which causes the scales along the outer extremities to move over the top of the green tissue. When this happens they appear black and dormant, blending into the soil crusts, until rains triggers the cycle to begin again. Even in seemingly barren landscapes, life finds a way.

IN PICTURES
THE JUMP-UP

The Museum received over 261mm of rain over eight days in January. This rain event was isolated, extreme and, at times, relentless. It started with wild storms that pushed through the paddocks creating dust storms followed by heavy downpours creating floods and road closures.

On 29 January the Museum received its biggest recorded daily rainfall since it opened in July 2009 a total of 145.5mm of rain. The country is wet, the Museum's dam is full and The Jump-Up has come alive again.

L-R: Culverts at the beginning of Dinosaur Drive; the newly sealed Britton Way overpass; dust storms seen from The Jump-Up. PHOTOS TRISH SLOAN


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
Renew now
Help us to preserve Australia's unique natural history

PALAEO PETE FUN

TRUE OR FALSE

Read the statements on the left and circle the appropriate letter under **T** (for true) or **F** (for false). When you have finished the circled letters reading down **will spell a word**. *Hint: this animal featured on the cover of the December newsletter.*

	T	F
Toothed and baleen are both examples of whales.	(F)	A
The 3.2-million-year-old *Australopithecus afarensis* bones found in Ethiopia were nicknamed Lauren.	R	E
When translated the scientific name of *Velociraptor* means 'rapid thief'.	R	Y
The Van Allen belts are the radiation belts that surround Earth.	R	T
The Mausoleum of Maussollos was found in Alexandria (Egypt)?	E	O
Naja naja is the scientific name for the cobra.	D	I
In meteorology the term *El Niño* means 'the man'.	G	R
The name *aqua fortis* refers to nitric acid.	A	F
Another name for ruminating is 'blowing the suds'.	L	C
Coal was formerly known as brimstone.	D	O

MATCH IT

In the grid below are seven words related to astronomy, but they've all been split into two. **Can you match up the parts?** They'll be one word left over. This is the mystery answer.

WHITE
SOLAR
HALLEY'S
KUIPER
SOUTHERN
LIGHT
BELT
SPUTNIK
~~MILKY~~
COMET
HEMISPHERE
DWARF
SYSTEM
YEAR
~~WAY~~

Answers on page 13