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A new Cretaceous dinosaur from Queensland, Australia sheds light on global sauropod evolution

The Australian Age of Dinosaurs Museum today announced the naming of *Savannasaurus elliottorum*, a new genus and species of dinosaur from western Queensland, Australia. The bones come from the Winton Formation, a geological deposit approximately 95 million years old. The paper naming the new dinosaur (available at http://www.nature.com/articles/srep34467) was published on Thursday October 20 at 2pm BST (Friday October 21 at 12am AEST) in *Scientific Reports*—an open access, online journal published by *Nature.*

Savannasaurus was discovered by David Elliott, co-founder of the Australian Age of Dinosaurs Museum, while mustering sheep in early 2005. As Elliott recalled yesterday, "I was nearly home with the mob—only about a kilometre from the yards—when I spotted a small pile of fossil bone fragments on the ground. I was particularly excited at the time as there were two pieces of a relatively small limb bone and I was hoping it might be a meat-eating theropod dinosaur." Mr Elliott returned to the site later that day to collect the bone fragments with his wife Judy, who 'clicked' two pieces together to reveal a complete toe bone from a plant-eating sauropod. The Elliotts marked the site and made arrangements to hold a dig later that year.

The site was excavated in September 2005 by a joint Australian Age of Dinosaurs (AAOD) Museum and Queensland Museum team and 17 pallets of bones encased in rock were recovered. After almost ten years of painstaking work by staff and volunteers at the AAOD Museum, the hard siltstone concretion around the bones was finally removed to reveal one of the most complete sauropod dinosaur skeletons ever found in Australia. More excitingly, it belonged to a completely new type of dinosaur.

The new discovery was nicknamed Wade in honour of prominent Australian palaeontologist Dr Mary Wade. "Mary was a very close friend of ours and she passed away while we were digging at the site," said Mr Elliott. "We couldn't think of a better way to honour her than to name the new dinosaur after her."

"Before today we have only been able to refer to this dinosaur by its nickname," said Dr Stephen Poropat, Research Associate at the AAOD Museum and lead author of the study. "Now that our study is published we can refer to Wade by its formal name, *Savannasaurus elliottorum*," Dr Poropat said. "The name references the savannah country of western Queensland in which it was found, and honours the Elliott family for their ongoing commitment to Australian palaeontology."

In the same publication, Dr Poropat and colleagues announced the first sauropod skull ever found in Australia. This skull, and the partial skeleton with which it was associated, has been assigned to *Diamantinasaurus matildae*—a sauropod dinosaur named in 2009 on the basis of its nickname Matilda. "This new *Diamantinasaurus* specimen has helped to fill several gaps in our knowledge of this dinosaur's skeletal anatomy," said Poropat. "The braincase in particular has allowed us to refine *Diamantinasaurus*' position on the sauropod family tree."

Dr Poropat collaborated with British sauropod experts Dr Philip Mannion (Imperial College, London) and Professor Paul Upchurch (University College, London), among others, to work out the position of *Savannasaurus* (and refine that of *Diamantinasaurus*) on the sauropod family tree. "Both *Savannasaurus* and *Diamantinasaurus* belong to a group of sauropods called titanosaurs. This group of sauropods includes the largest land-living animals of all time," said Dr Mannion. "*Savannasaurus* and the new *Diamantinasaurus* specimen have helped us to demonstrate that titanosaurs were living worldwide by 100 million years ago."

Poropat and his colleagues suggest that the arrangement of the continents, and the global climate during the middle part of the Cretaceous Period, enabled titanosaurs to spread worldwide.

“Australia and South America were connected to Antarctica throughout much of the Cretaceous,” said Professor Upchurch. “Ninety-five million years ago, at the time that *Savannasaurus* was alive, global average temperatures were warmer than they are today. However, it was quite cool at the poles at certain times, which seems to have restricted the movement of sauropods at polar latitudes. We suspect that the ancestor of *Savannasaurus* was from South America, but that it could not and did not enter Australia until approximately 105 million years ago. At this time global average temperatures increased allowing sauropods to traverse landmasses at polar latitudes.”

Savannasaurus was a medium-sized titanosaur, approximately half the length of a basketball court, with a long neck and a relatively short tail. “With hips at least one metre wide and a huge barrel-like ribcage, *Savannasaurus* is the most rotund sauropod we have found so far—even more so than the somewhat hippopotamus-like *Diamantinasaurus*,” said Dr Poropat. “It lived alongside at least two other types of sauropod (*Diamantinasaurus* and *Wintonotitan*), as well as other dinosaurs including ornithopods, armoured ankylosaurs, and the carnivorous theropod *Australovenator*.”

Mr Elliott is relieved that Wade can now join “Matilda” and the other new dinosaur species on display in the Museum's Holotype Room. “That this dinosaur specimen can now be displayed for our visitors is a testament to the efforts of numerous volunteers who have worked at the Museum on the fossils over the past decade,” he said. Mr Elliott and Dr Poropat agree that the naming of *Savannasaurus*, the fourth new species published by the AAOD Museum, is just the tip of the iceberg with respect to the potential for new dinosaur species in western Queensland. “The Australian Age of Dinosaurs Museum has a massive collection of dinosaur fossils awaiting preparation and the number of specimens collected is easily outpacing the number being prepared by volunteers and staff in our Laboratory,” Mr Elliott said. “The Museum already has the world’s largest collection of bones from Australia’s biggest dinosaurs and there is enough new material to keep us working for several decades.”

Images and video footage are available and can be accessed by following these links:
https://www.dropbox.com/sh/4jej24cyxtvpe7n/AABSMdSPckz7cCHyT5plWOY_a?dl=0
https://drive.google.com/drive/folders/0B5SLXgSb6r8iYXE3OWVMZ2pFcHM

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