



Elliot the sauropod, Australia's largest dinosaur, approaches a waterhole to drink, accompanied by his mate, Mary. Theropods scurry around his feet, catching insects attracted to huge piles of dung, while on the opposite bank a few *Muttaborrasaurus* pause to drink, watched by basking crocodylians. Bones of both these sauropods were recently discovered together at a site near the outback town of Winton, central-western Queensland.

## THERE'S SOMETHING ABOUT MARY

Stephen Luntz finds that gender is one of the questions surrounding the partner of Australia's largest dinosaur.

Australia's largest and most famous dinosaur, Elliot, has spent the 95 million years since his death intertwined with the bones of another sauropod, possibly his mate.

The existence of another dinosaur, dubbed Mary, was discovered as a result of inconsistencies in the sizes of the bones being removed from the site near Winton where Elliot was found.

Remnants of other species buried at the same time are building a picture of the ecosystem in which Elliot and Mary lived.

Mary was named after Dr Mary Wade, a former Queensland Museum curator of palaeontology who described the only known dinosaur stamped at Lark Quarry (also near Winton). Her species is yet to be identified, and she is around half



Schematic reconstructions of Elliot (left) and Mary (right) based on a generalised titanosauriform sauropod. Collected bones that can confidently be referred to each animal are shown in yellow and red, respectively. While Elliot is estimated to have been 16–21 metres long, Mary was about half his size at 10–12 metres.



Land owner Judy Elliott piecing together fragments of left arm bone of "Mary".

Elliot's size. However, the coincidence of two sauropods dying so close together has led to speculation that Mary may have been Elliot's mate. This is the first time two Australian sauropods have been found together.

Elliot may represent a new species of sauropod, but it seems more likely that he is an *Austrosaurus* like the other sauropods found in Western Queensland. Like all sauropods he was a long-necked plant-eating creature with enormously thick legs and a relatively small head and tiny brain. Better known sauropods include *Brachiosaurus* and the species alternatively known as *Apatosaurus* or *Brontosaurus*.

"It is still unclear what caused their deaths but, whatever happened, both carcasses ended up on the banks of a billabong or on the bend of a meandering river, somewhere in the middle of a vast, heavily forested coastal plain," said team leader Dr Steve Salisbury of the University of Queensland's School of Life Sciences.

Salisbury noted that both dinosaurs were "preserved in the same narrow band of siltstones", suggesting they must have died at very similar times. He



UQ volunteer Kerry Geddes digs around a pedestal of rock containing what appears to be a vertebra from the base of Mary's neck.

admits, "I can't be 100% certain until we do more analysis of the sediment surrounding the bones," but suspects they died in the same event, possibly a massive flood. Other bones have been deposited 50 metres away, and then another 100 metres, suggesting that many animals may have died upstream in what was once a great river, and then washed down and deposited on nearby bends.

The discovery by farmer Dave Elliott of Elliot's 1.6-metre thighbone in 1999 (*AS*, Nov/Dec 2001, p.7) has provided a pointer to many other species. "Among the smaller fossils associated with the sauropod bones are the teeth of medium-sized meat-eating dinosaurs called theropods," Salisbury said. "These particular theropods would have been slightly larger than the 'raptors' in *Jurassic Park*."

"There are also numerous teeth from dwarf crocodylians. Both the theropod and the crocodylian teeth are broken off at their bases, suggesting that they may have been lost while these animals were scavenging on the sauropod carcasses. It also looks like we've found the remains of some of the turtles that inhabited the waters in which the sauropods died."

Crocodyles grow their teeth continuously, and often lose teeth when they are subduing prey or feeding. Evidence from other sites suggests the same may have been true for theropods.

While Elliot was 16–21 metres long and weighed 22–28 tonnes (about as much as five African elephants), Mary is believed to have been 10–12 metres long and weighed 14–16 tonnes. Mary has been better preserved than Elliot, with the majority of bones so far discovered belonging to her.

The naming of Elliot and Mary may turn out to be misleading because establishing the sex of dinosaurs is not easy. However, it has been observed that some species show the same pattern as modern crocodyles, where females have fewer haemal



The team places a plaster jacket on a small fragment of bone.

arches at the base of the tail in order to make room for an egg-laying cloaca. "Among tyrannosaurs, we see a consistent variation in the arches correlating with size, with the female pattern being associated with larger skeletons and the male with smaller," Salisbury said.

Similar studies have not been done on sauropods, and nothing can be gleaned from Elliot and Mary since the necessary tail vertebrae have not been found. However, if the size pattern holds true it is possible that the pair have been misnamed, with Elliot being the female and Mary the male. In this case, Salisbury says he has "no objection to them swapping names". On the other hand, he suspects that, regardless of "her" gender, Mary will turn out not to be fully-grown.

Determining which bones belong to Mary and which to Elliot is not always easy. "It's a slow process," Salisbury said, "but considering the rarity of dinosaur bones in Australia we can't afford to take any risks. This type of palaeontology is all about patience."

The Queensland Museum is seeking applicants interested in making history as one of 10 paying participants in the 2004 dig to uncover more bones from Elliot and Mary's site.



Steve Salisbury (left) and UQ student Stewart Macdonald examine part of one of Mary's limb bone.