

April 9, 2013, 10:10 a.m.

The 'biggest dinosaur' question is a healthy obsession



MIKE TAYLOR - Sometimes I go into schools to talk about palaeontology. I talk about the hard work that people put into digging up fossils, the obsessive detailed work of figuring out what they are, the fascination of putting together a picture of how prehistoric animals lived, and the unique thrill of discovering something new - of being, for a little while, the only person in the world who knows a certain fact. I talk about the extraordinary way that an unintelligent process like natural selection gives rise to apparently intelligent results. I point out that one family of dinosaurs, the birds, is still with us.

And then I take questions.

And *every single time* the first few questions are the same: 'What was the biggest dinosaur?', 'How big was it?', and 'What was the biggest meat-eater?' It's perfectly understandable. After all, it's the first thing you notice about dinosaurs when you see them in a museum: their size.

The Proper Palaeontologist response to this is to dismiss it with a superior air as mere trivia. There's so much more to learn, runs the argument, than how *big* dinosaurs were. That's just raw biological data. The really interesting stuff is how they lived. What was their usual posture? How did they move? What did they eat? How did they compete for mates? Did they care for their young? Did they live in herds?

Truly, there's an astonishing amount to discover - new techniques are giving us ways to find out details we used to think we'd never know, like the colours of dinosaur feathers and the changing rates of growth throughout a dinosaur lifetime.

But I can't quite join in the disdain for what-was-the-biggest. The truth is that it's still a question that fascinates me, and it's just as valid and important as all the dinosaur lifestyle questions.

For one thing, size brings its own problems. The largest living animal, and as far as we know the biggest of all time, is the blue whale. Recent research shows that it's close to the limit of how fast it can feed using its energetically demanding lunge strategy.

The biggest living animal on land is the African elephant, and its size means it has to walk with a clumsy straight-legged gait that makes it impossible to run properly. The dinosaurs surely had to deal with similar problems - but how can we even evaluate what constraints they operated under without first knowing how big they were?

Considering the huge size of sauropods leads us to reconsider other aspects of their anatomy. Sauropods had lightly built skulls, weak jaws and feeble teeth. From our mammalian perspective, their heads seem inadequate, so early palaeontologists assumed that they were limited to eating soft water-plants.

In fact, the apparently inferior heads of sauropods were a secret of their success: by eliminating chewing, they were able to hugely increase their ingestion rate and let their massive guts do the work of processing food.

The ends of sauropod limb bones don't have well-formed surfaces like those of mammals. but an

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irregular, rough surface that in life would have carried thick cartilage. As with sauropod skulls, scientists used to assume that this is inferior to the condition of mammals; it's now generally thought that this thick cartilage was an adaptation that better suited them for carrying a massive body.

Thinking about the size of the biggest dinosaurs opens up new lines of thought about the lifestyles and anatomy. It's a legitimate scientific question, and one that kids - and grown-ups - should not feel ashamed of.

- Dr. Mike Taylor is a computer programmer in his day-job, and a Research Associate at the University of Bristol. He has the luxury of working almost exclusively on sauropods, the most impressive and inspiring of all dinosaurs.



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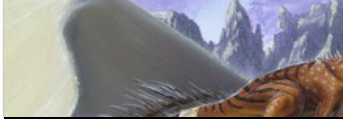


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