

A *DIPLODOCUS*-SIZED BIPEDAL BASAL SAUROPODOMORPH FROM THE LATE TRIASSIC OF SOUTH AFRICA

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A partial skeleton of a basal sauropodomorph (or ‘prosauropod’) from the Lower Elliot Formation (mid to late Norian) of South Africa represents an animal of unprecedented size for that place and time. Material sufficiently exposed for measurement includes an anterior dorsal vertebra, an anterior caudal vertebra, a dorsal rib, a caudal chevron, an ulna, and a pedal ungual. Other skeletal elements have been recovered but are still under preparation. All of the elements are exceptionally large, on average 1.9 times the linear size of the largest known individual of the contemporary and probably closely related *Aardonyx*. *Aardonyx* was itself a large animal, with a femur length of ~800 mm for the largest specimens, and it was previously the largest known non-sauropod from the Lower Elliott Formation. Cross-scaling from *Aardonyx*, the contemporary *Plateosaurus*, and other large basal sauropodomorphs suggests a femur length of ~1500 mm and a mass of 10-15 metric tons. These estimates are comparable to the femur length (1540 mm) and estimated mass of CM 84/94, the mounted holotype skeleton of *Diplodocus carnegii*. The morphology of the ulna suggests that, like many other large basal sauropodomorphs, the giant Elliot form was an obligate biped. In addition, the ulna is unusually short and robust, only 80% of the expected length based on the rest of the measured elements. This is opposite the trend of increased forelimb length observed in quadrupedal basal sauropods, and further supports the inference of bipedality. The giant Elliot form represents the largest known non-sauropod sauropodomorph, one of the largest terrestrial animals prior to the Jurassic, and one of the largest bipedal animals of all time. It demonstrates that basal sauropodomorphs were able to achieve very large body size despite lacking most of the presumed key innovations of sauropods, such as quadrupedal stance, columnar limbs, and extensive skeletal pneumaticity.