

# Marsupial lion tops African lion in fight to death

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Pound for pound, Australia's extinct marsupial lion (*Thylacoleo carnifex*) would have made mince meat of today's African lion (*Panthera leo*) had the two big hyper-carnivores ever squared off in a fight to the death, according to an Australian scientist.

New research published in the *Journal of Zoology* suggests that *Thylacoleo* killed prey rapidly, using its "bolt-cutter" type teeth to scissor through hide and flesh to produce major trauma and blood loss.

By contrast, African lions and similar big cats of today use their bite force to suffocate prey, using a "clamp and hold" technique that can take up to 15 minutes with large prey such as Cape buffalo.

"My results suggest that the marsupial lion employed a unique killing technique," says research author Stephen Wroe. "It used its massive carnassial cheekteeth to effect major trauma and a rapid kill. Unlike any living mammalian carnivores, the marsupial's carnassials were not only butchery tools but also active components in the killing process."

Using a sophisticated computer modelling method [finite element (FE) analysis], that renders dynamic 3D models based on CT scans of the marsupial's cranial mechanics and musculoskeletal architecture, Wroe has revealed that the creature's skull, jaw, and head and neck muscles were well adapted to using the unique technique for killing large prey, but not for delivering the prolonged suffocating bite of living big cats.

“The marsupial lion also had an extremely efficient bite,” Wroe says. “In addition to very powerful jaw muscles for its size, its muscle and skull architecture were arranged in such a way as to take greater advantage of leverage than in living cats.”

Wroe, who has published findings about bite force in other hypercarnivores, such as great white sharks and sabre tooth tigers, believes there is now no doubt that Australia’s marsupial lion was a fearsome predator that punched well above its weight.

“Certainly, T carnifex was seriously over-engineered for dispatching small prey. These new findings support the conclusion that the creature regularly preyed on relatively large species and was able to effect quick kills and withstand large forces generated by large struggling prey.

“Hypothetically, had a large marsupial lion ever come face to face with an African lion of similar size, it could have use its deadly cheek teeth and incredibly powerful arms to inflict mortal wounds on the mammal,” Wroe says. “Had it not become extinct, it might now hold top spot over toady’s ‘king of the jungle.’”

Source: University of New South Wales

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