Crocodilians bite with the best

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Crocodile. Image: Wikimedia Commons.

Crocodiles can kill with the strongest bite force measured for any living animal, according to a report published Mar. 14 in the open access journal *PLoS ONE*.

The authors of the study, led by Gregory M. Erickson of Florida State University, measured the bite forces, as well as tooth pressures, for mature adults from all 23 living crocodilian species, including crocodiles, alligators, caimans, and gharials. The strongest biter was a saltwater crocodile at 3,700 pounds. It also generated record setting pressures exceeding 360,000 pounds per square inch.

"Our study has allowed for a comprehensive understanding of the relationships between the anatomy, biomechanics, performance, and ecology among living and fossil crocodilians from which the secrets to their 85 million year success can be gleaned. Notably, the largest extinct crocodilians generated bite forces in excess of 23,000 pounds, values two-fold greater than *T. rex*."

The researchers found that bite force was correlated with body size, but showed surprisingly little correlation with tooth form, diet, jaw shape or jaw strength. Their results suggest that once crocodilians evolved their remarkable capacity for force-generation, further adaptive modifications involved changes in body size and the dentition to modify forces and pressures for different diets.

More information: Erickson GM, Gignac PM, Steppan SJ, Lappin AK, Vliet KA, et al. (2012) Insights into the Ecology and Evolutionary Success of Crocodilians Revealed through Bite-Force and Tooth-Pressure Experimentation. *PLoS ONE* 7(3): e31781. doi:10.1371/journal.pone.0031781

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