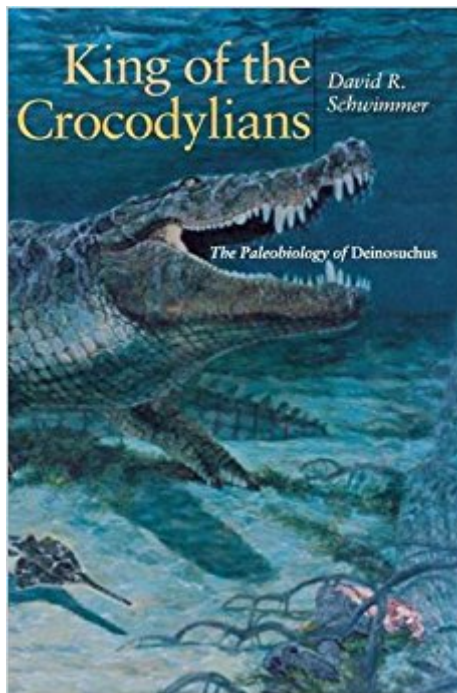




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King Of The Crocodylians: The Paleobiology Of Deinosuchus (Life Of The Past)



Synopsis

Toward the end of the Age of Dinosaurs, during a time known as the Late Cretaceous, a new type of giant predator appeared along the southern coasts of North America. It was a huge species of crocodylian called *Deinosuchus*. Neither a crocodile nor an alligator, it was an ancestor of both modern groups; it reached weights of many tons and it had some features unique to its own species. Average-sized individuals were bigger than the carnivorous dinosaurs with which they co-existed; the largest specimens were the size of a T-rex. King of the Crocodylians, the biography of these giant beasts, tells the long history of their discovery and reports on new research about their makeup. The book also deals with the ancient life and geology of the coastal areas where *Deinosuchus* thrived, its competitors, and its prey, which probably included carnivorous dinosaurs. There is also detailed discussion of the methods used to determine the size of these giant animals, the dating of the fossils, the nature of their living environments, and how we know who ate whom 80 million years ago.

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Customer Reviews

Schwimmer offers a study of the paleoautecology of a Cretaceous crocodylian, *Deinosuchus*. Thoughtfully organized, the book's chapter headings reflect answers to some basic questions: How big was it? How old was it? Where was it found? What did it eat? How many species existed? Astute readers will gain insight into the thinking of a practicing vertebrate paleontologist as the author probes these questions. But the target audience for this trade book is not

obvious— technical jargon is sometimes explained in the text (and thoroughly covered in the appendixes), but its usage in the text requires an advanced level of understanding. The author complains about the requirements of the zoological rules of nomenclature, which seems counterproductive in such a work. The book will be most useful for paleoecologists hoping to gain a deeper understanding of life in the Cretaceous. Upper— division undergraduates through professionals. P. K. Strother, Boston College, Choice, December 2002 "Schwimmer offers a study of the paleoautecology of a Cretaceous crocodylian, *Deinosuchus*. Thoughtfully organized, the book's chapter headings reflect answers to some basic questions: How big was it? How old was it? Where was it found? What did it eat? How many species existed? Astute readers will gain insight into the thinking of a practicing vertebrate paleontologist as the author probes these questions...."

— Choice, December 2002

David R. Schwimmer, Professor of Paleontology at Columbus State University in Georgia, is an expert on the Late Cretaceous paleontology of the southeastern United States. Author of many papers on Cretaceous vertebrates, he is co-author (with W. J. Frazier) of *Regional Stratigraphy of North America*, which won the award for "Best Reference Book of the Year" from the Geoscience Information Society.

David Schwimmer's book stands as the most comprehensive look at the natural history of one of the largest crocodylians ever to roam the earth. The opening chapter starts off a lot like Steve Alten's *Meg*. A hapless theropod winds up in the wrong place at the wrong time. While *Meg*'s scenario was entirely fictitious (*Carcharocles megalodon* was not around during the Cretaceous), Schwimmer's scenario is actually based off of some factual evidence. For the rest of the book, Schwimmer justifies his scenario by presenting evidence for the size, habitats and prey of *Deinosuchus*. Schwimmer breaks up each of the 8 chapters into different sections on *Deinosuchus*. Starting with the semi-fictitious intro, then going into its chaotic taxonomic origin, when, and where it appeared, how big it got, what creatures it was related to, and who was preying on whom back in the Late Cretaceous. All the evidence is viewed objectively, with the author's view stated at the end. Some highlights include an interesting section of the 2nd chapter, which showed some of the bias seen in non-dinosaur/non-mammalian work. More often than not, the reason we know as little as we do about other ancient reptiles, is because of a lack of interest in them. One prime quote from that chapter (pg 29) really sums this up: "Holland (1909) reported that, upon recognizing the animal leaving all these big bone fragments was a huge crocodylian: 'Mr. Hatcher immediately lost interest

in the material..."Thankfully, this skewed point of view has been slowly changing. If it hadn't, then this book would never have been written. Schwimmer also deals with the infamously inaccurate skull reconstruction that used to be on display on the 4th floor of the AMNH. This reconstruction and numerous pictures based off it, has been used in popular and professional literature to estimate the size and dimensions of the animal. Schwimmer shows how this inaccurate restoration came to be, and exactly what was wrong with it. Replacing this misinformation, is the most accurate, and up to date measurements of the animal. While the old measurements had Deinosuchus hitting lengths of 50+ ft (based off that inaccurate skull), the newer measurements only shrink the crocodylian down by ~11ft and weighing in at 8.5 tonnes in the largest individuals. While showing off size, Schwimmer also shows the readers that there were two different sized populations of this genus. Eastern populations were smaller (~26ft and 2.3 tonnes) and more numerous than western populations. Schwimmer even compares these new size measurements to other giants from the fossil record. In most cases Deinosuchus comes out on top compared to most carnivores of its time, or of any time (to help put things in perspective, this crocodylian was a full 1.5 tonnes larger than T.rex). The book alludes to an interesting trait of fossil "supercrocs." As Schwimmer describes other large crocodylians throughout prehistory (an apparent "trend" in this group), one notices that fossil supercrocs suffer from the exact opposite problem that most large vertebrate skeletons suffer. There tends to be really good skull material, but little, or no postcranial material. Deinosuchus anatomy is thoroughly discussed. Schwimmer shows just how important crocodylian osteoderms are, and using traits of these osteoderms, shows that erect walking (aka "high walking") was possible in even the largest Deinosuchus specimen. Schwimmer also spends ample time on the unique dentition in Deinosuchus. Most of the teeth were short, blunt and rounded. According to Schwimmer this was originally evolved for turtle eating purposes, and was later exapted towards dinosaur eating in the species (especially the western pop). Schwimmer also gives mention to the incredible force exerted by the jaws of these animals and shows that Deinosuchus had the strongest jaws of any animal known to science regardless of time period. Chapter 7 gives a fairly comprehensive rundown of the group of animals that lead to Deinosuchus. It is nice, for it shows just how taxonomically confusing the crocodylotarsi group is, while also going a little farther to dispelling the myth that crocodylians have changed little in 200 million years on earth. Though there was no mention of pristichampsids, or Stomatosuchus, Schwimmer does mention Malawisuchus and the new Madagascar crocodyliforme, which had teeth and body forms similar to herbivorous mammals and dinosaurs. With all this variation and diversity showcased, it is somewhat disappointing to hear Schwimmer state that he doesn't consider the crocodylotarsi group

to be as derived from basal archosaurs as dinosaurs and birds are (something I completely disagree with). Overall though, this chapter really goes far in highlighting the many different bodyforms that lead to Deinosuchus. The final chapter of the book talks about what, exactly, Deinosuchus was eating back then. Studying the dentition, habitats and evidence of predation, Schwimmer shows that turtles made up a large part of the diet for, at least, eastern Deinosuchus populations. Schwimmer also shows that Deinosuchus in both the western and eastern parts of North America, were not only eating dinosaurs, but were outcompeting the carnivorous theropods in the area (and occasionally eating them too). So, by the end of the book, one has come full circle. Schwimmer's writing style is reminiscent of my own. He doesn't dumb down the technical terms, but instead provides definitions for words and scenarios in parenthesis, or in an appendix (and occasionally goes off on parenthetical tangents like this one). The layout of the book allows one to either read it from cover to cover, or to just pick it up and look for a particular subject. If more info is mentioned later, or earlier in the book, the location is placed in parenthesis for easy reference. If you're into ancient life, crocodylians, reptiles, or if you just liked National Geographic's: Supercroc special, then I highly recommend this book. Sarcosuchus is cool, but Deinosuchus is the supercroc that started it all. Kudos to David Schwimmer, James Farlow and all the other "Life of the Past" workers, for showing that dinosaurs weren't the only cool creatures alive millions of years ago :)

This is an all around interesting read for those who are somewhat familiar with more intensive scientific research. Professor Schwimmer is obviously an expert on Crocodylians, paleontology, as well as paleo-environments. All the technical descriptions he does of the different aspects of body design, dentition, habitat, study of bone damage (bite markings) etc., all show the extensive amount of research involved to make definitive conclusions about the animals living habits and status in the ecosystem. There was just enough balance between the hypothetical story in the beginning, and all the other hard science in the rest of the book (that backed up the hypothetical story), to make for an enlightening read. This shows the laymen just how intricate and intensive reanimating prehistoric ecosystems and animals truly is. And of course being interested in giant dinosaur eating crocs doesn't hurt either!

An interesting book, certainly worth a look by those who, like myself, have been fascinated by the original 'supercroc' for a long time. Nevertheless if like me you are not a palaeontologist you might find this book a little on the dry side. An early hypothetical meeting of eastern Deinosuchus and

dinosaur grips the attention but after that the book seems to become very obsessed with a few areas; mainly the lineage of Deinosuchus, the investigation of eastern and western Deinosuchus and whether they were related and a certain amount on its evolution and diet. To my mind the mixture of purely factual peer-reviewed paper and hypothetical drama wasn't an entirely happy one. I felt there could have been more about the life-cycle of Deinosuchus; the western animals predation on larger carnivores; and deeper investigation in to why such a large, successful predator (the largest heavier than both T-rex or Giganotosaurus!), which had suppressed the development of larger dinosaur predators on the east coast died out before the mass extinction. The ending is also distinctly anti-climactic, even Scientific American / New Scientist writers end their articles with a bit more of a bang! It's still a fascinating book. It's obvious that a lot of research has gone into and I don't regret buying it, but I think it could have been a couple of chapters longer and filled in a few more blanks about the life of Deinosuchus in general for the benefit of us lay enthusiasts.

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