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Mammoths, Sabertooths, And Hominids: 65 Million Years Of Mammalian Evolution In Europe



Synopsis

Mammoths, Sabertooths, and Hominids takes us on a journey through 65 million years, from the aftermath of the extinction of the dinosaurs to the glacial climax of the Pleistocene epoch; from the rain forests of the Paleocene and the Eocene, with their lemur-like primates, to the harsh landscape of the Pleistocene Steppes, home to the woolly mammoth. It is also a journey through space, following the migrations of mammal species that evolved on other continents and eventually met to compete or coexist in Cenozoic Europe. Finally, it is a journey through the complexity of mammalian evolution, a review of the changes and adaptations that have allowed mammals to flourish and become the dominant land vertebrates on Earth. With the benefit of recent advances in geological and geophysical techniques, Jordi Agustn and Mauricio Antn are able to trace the processes of mammalian evolution as never before; events that hitherto appeared synchronous or at least closely related can now be distinguished on a scale of hundreds or even dozens of thousands of years, revealing the dramatic importance of climactic changes both major and minor. Evolutionary developments are rendered in magnificent illustrations of the many extraordinary species that once inhabited Europe, detailing their osteology, functional anatomy, and inferred patterns of locomotion and behavior. Based on the latest research and field work, *Mammoths, Sabertooths, and Hominids* transforms our understanding of how mammals evolved and changed the face of the planet.

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Customer Reviews

An exceptionally valuable, scholarly, yet widely accessible broad outline of the dazzling evolutionary

history of the mammalian faunas and selected lineages during the Age of Mammals, the Cenozoic....an important contribution for those paleontologists and zoologists who are not mammal specialists, yet have wide-ranging interests in macroevolution. Very highly recommended. (Choice)A rich paleontological panorama....What struck me most forceably about the work is the magnitude of change experienced by the region over this period. (Times Literary Supplement)An excellent balance of coverage between different lineages--and impressive achievement in and of itself.... This is a very successful study, which tackles a difficult task with admirable deftness. (Journal of Mammology)Full of interesting matter...a vital aid in assisting the nonexpert reader to see the big picture. (Tim Flannery Science)An important resource for specialists who wish to know the latest about European mammal evolution, because so much has changed since [Bjorn] Kurten (1971)... Agustí has done an excellent job of bringing these latest developments into the text and integrating them with the great increase in our understanding of European tectonics as well. (Earth Science History)A fine book for all who have an interest in mammals, whether extant species or fossil species. Nicely done. (Northeastern Naturalist)It is always a pleasure to review a book that is accurate, easy to read and beautifully illustrated. (Peter Andrews Journal of Mammalian Evolution)

This book covers mammalian evolution from the aftermath of the dinosaur extinction to the glacial climax of the Pleistocene epoch, from early lemur-like primates to giant cold-climate adapted mega-mammals, such as the woolly mammoth or mastodon.

I'm not a scientist but I read among other genres a lot of science books. Many science books are just a stamp collection of names and descriptions of limited characteristics, and indeed this author describes teeth a lot, but it's forgiven in the vivid color, completeness, interest of the author's views. Many of the animals were new to me and there was lots to think about. I often got lost with the many scientific names of families, genera, and species, but by looking at the web I was able to keep the many threads of evolution separated (somewhat). Sadly more mass extinction events happened than I ever dreamed of and I had to say good bye to many animals just as I was getting to know them, for example how many advanced complex symbiotic relationships developed and are now gone?

Written for the specialist or student in evolutionary biology and paleontology this book can nevertheless be studied by anyone who has an interest in these topics. For this reviewer, the main interest in this book was in the effect of climate on mammalian extinctions, with the hopes of

shedding light on the current debate on climate change/global warming. Since the book is directed towards the specialist, the non-specialist will have to deal with a large amount of terminology, this arising mostly from the classification schemes used in paleontology and zoology. This reviewer found it helpful to use a few note sheets along the way to assist in remembering some of the scientific names of the major fauna that did exist in the time frame over which the book covers. Having some background in biology and geophysics will also help in the assimilation of the material in the book, particularly in cases where the authors are discussing dating techniques. There is no part of this book that is uninteresting, and the excellent plates and drawings in the book add to the pleasure in its perusal. And the book went beyond this reviewer's expectations regarding the effects of climate change on mammalian extinctions: there are many examples discussed in the book and a few surprises, such as the assertion that the Mediterranean was completely desiccated around 6,000,000 years ago (the late Miocene). Early on though the authors caution the reader that even though much is known now regarding the time series of temperatures and oceanic changes throughout the last 65,000,000 years, one cannot conclude that there is an exact correlation between changes in climate and changes in mammalian ecosystems. Very interesting also is how the authors deduce the dietary habits of extinct mammals by examining their fossilized teeth and jawbones. This "comparative" paleontology allows one to ascertain what flora were more prevalent in ages past by comparing the dental arrangements of modern mammals with those that are extinct. The variability in dental morphology it seems does have a direct correlation with the flora that were present during the time frame that the mammal was alive. An excellent example of this, which the authors discuss in the book, is the presence of 'hypsodonty', which is dental morphology wherein the teeth have high crowns and enamel that extends beyond the gum line. The authors explain this as an adaptation to the silica grains that would be present in the grasses of the Pliocene age. Mammals without this adaptation would face extinction pressures due to the quick abrasion of the teeth due to these grains. Another interesting discussion in the book concerns the 'Monterey hypothesis', which is an attempt to understand the "climate crisis" in the middle Miocene in terms of the sequestering of large quantities of organic carbon. This resulted in accelerated global cooling because of the drawdown of atmospheric CO₂ and the end of certain warm-water circulations. The authors discuss the experimental evidence for this hypothesis. Mammalian extinctions can therefore be caused by climate change as well as genetics. The authors however point to another cause of these extinctions, namely the rise of the homo sapiens species, which the authors characterize as being "unique" in "its ability to exterminate other species." They give evidence to support this, but also note that that modern humans also fall prey to the very mammals that benefit from human

expansion, such as the rats in the Middle Ages. But as they also note, *H. sapiens* is a wandering species. They moved into Australia as well as North America, and of course now dominate the planet. But this species, which on rare occasions decimates its own, is insatiably curious and has shown absolute brilliance throughout its sojourn on Earth...and on other worlds where it is just getting started.

Very comprehensive and not 'dumbed down' so many other books on the subject. I have one of the companion books as well which involves mammalian evolution in Africa. Not just a Paleontological laundry list of animals, the authors carefully tie in the course of mammalian evolution with the crucial tectonic events that have shaped the Cenozoic in the European region. Well worth the price!

... through 65 million years of "punctuated" mammalian evolution, based on the vast fossil record of greater Europe. If you don't have something of a fresh background in archaeological zoology, if concepts like "clades" and "radiations" are unfamiliar, if you've never been able to keep the Eocene separate from the "epicene", you'll never get past the first 5 million years. There are hundreds, possibly thousands, of words used freely in this book that are not part of our everyday vocabulary; on ONE random page, (56), I find: microchoerid, adapid, dimorphism, creodont, hypercarnivorous, sectorial, cursorial, digitigrade, miacid, canid, ursid, amphicyonid, paleothere, lophiodontid, and brachyodont. And that doesn't include the italicized Genus/species names! Now many readers will be able to handle these terms, based on recognition of their Latin/Greek roots, but the onslaught of specialized vocabulary continues for 281 large pages. If you think I'm trying to scare you, you're right. I don't want you to waste your money. Nevertheless, this is a profoundly interesting and significant study of evolution within a delimited geography, revealing better than anything else I've read the random and contingent relationship between Darwin's "descent with modification" and the "catastrophic" events of the environment. By observing the waves of equilibrium and extinction/replacement in relation to changes in sea level, opening/closing of land-bridges due to continental drift, and huge shifts of climate, one can understand "evolution" over vast epochs of time far more credibly. The latter subject - climate change - makes this book more pertinent at present than mere intellectual curiosity. Climate change has been real. It has resulted in massive extinctions... and massive evolution of new forms, "endless forms most beautiful." By studying the climate changes of the past, we do have some chance of predicting the impact of the rapid climate change now occurring (with or without the uninformed consent of the McPalin crowd) and hedging our bets about our own chances as a species. I'm delighted, personally, by the realization that

global warming will stimulate the evolution of wonderful new species, even new genera, within a few thousand years, but I'm unlikely to be around to see them. The difficulty of the text is partly relieved by excellent illustrations, including very clear drawings of key fossils and plausible re-imagining of the mammals they came from. In pictures and in words, you'll encounter a parade of preposterous critters - far more and far stranger than Noah's Ark could possibly have carried - all of which thrived and multiplied in some niche in the ever-changing environment of Europe. Among them, by the way, were monkeys, baboons, hominids, *Homo erectus*, *Homo antecessor*, *Homo neanderthalis*, and *Homo sapiens* -- all supplanted, alas, by *Homo not-so-sapiens-after-all*.

Interesting and educational - I commend it to those interested in this topic

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