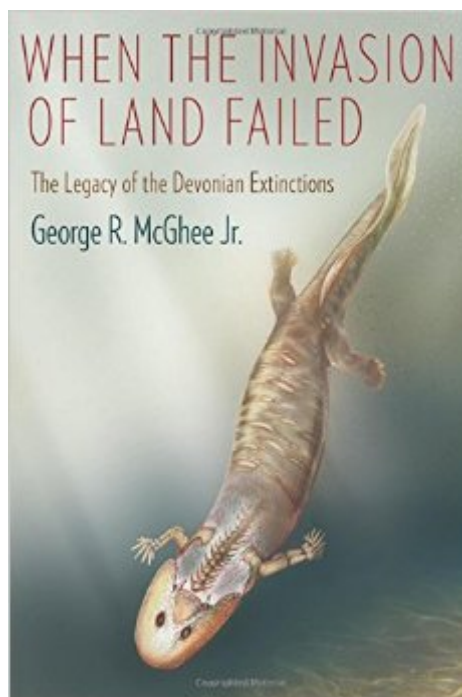


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# When The Invasion Of Land Failed: The Legacy Of The Devonian Extinctions (The Critical Moments And Perspectives In Earth History And Paleobiology)



## Synopsis

The invasion of land by ocean-dwelling plants and animals was one of the most revolutionary events in the evolution of life on Earth, yet the animal invasion almost failed—twice—because of the twin mass extinctions of the Late Devonian Epoch. Some 359 to 375 million years ago, these catastrophic events dealt our ancestors a blow that almost drove them back into the sea. If those extinctions had been just a bit more severe, spiders and insects—instead of vertebrates—might have become the ecologically dominant forms of animal life on land. This book examines the profound evolutionary consequences of the Late Devonian extinctions and the various theories proposed to explain their occurrence. Only one group of four-limbed vertebrates exists on Earth, while other tetrapod-like fishes are extinct. This gap is why the idea of "fish with feet" seems so peculiar to us, yet such animals were once a vital part of our world, and if the Devonian extinctions had not happened, members of these species, like the famous *Acanthostega* and *Ichthyostega*, might have continued to live in our rivers and lakes. Synthesizing decades of research and including a wealth of new discoveries, this accessible, comprehensive text explores the causes of the Devonian extinctions, the reasons vertebrates were so severely affected, and the potential evolution of the modern world if the extinctions had never taken place.

## Book Information

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## Customer Reviews

To me, the colonization of land is the most interesting of subjects. Mass extinction is great! And the Devonian Period, that "Age of Fishes", is the finest. Period. This book says it all. As a tetrapod I

enjoyed reading this, my family history. We had our close calls but we made it. This volume is very readable and doesn't lose the reader with so many conflicting theories. Sea level up, sea level down. Vulcanism, anoxia, bolide impact, the soup is hot, the soup is cold. He presents his argument and when he's done, you are happy you read this book. Thanks George! How about a Carboniferous tetrapod follow up volume?

I rated it 4 stars in that it is very technical for laymen and I had some problems keeping track of the technical language and time periods in the Devonian. However, it is packed with some good facts and it appears when things go wrong they come in series or pulses during some of the extinctions of the Devonian. In my opinion, I think that the Fish Vertebrates would eventually become land dwellers, no matter how many had failed in the attempt, because a lot of fish species seemed to have most of the equipment for evolving into terrestrial animals. It appears that when a winning combination of characteristics evolves in a single species, it radiates into many species. I think this was the case in some of the Devonian fishes. The land environment was right for habitation with the ozone layer, along with plants and insects already existing on land making ready made niches for the vertebrates to occupy. It's not a case of "IF", but When and Whom. The real question is, which one made onto land and became the ancestor of all existing and extinct Vertebrates? This maybe an unanswerable question, but, don't stop trying, science may find more interesting facts about our terrestrial ancestors in their research. My favorite candidate for the ancestor is Tiktaalik, but that is only my laymen opinion and besides I like Neil Shubin

Prof. McGhee has compiled an exhaustive array of data among all animal phyla (groups) to document the decline (and mass disappearances) of many organisms, along with the successful adaptations of some to produce survivors' lineages. What was more significant for me was the author's consideration of what environmental catastrophes would cause a mass extinction. The Late Devonian witnessed a serious climatic shift that produced extensive glaciation. This, in turn yielded global marine anoxia in stagnant, shallow seas that resulted from drastically lowered sealevels. Given the rise of land plants, large amounts of carbon sequestration in these seas yielded the petroleum bonanzas in the North Dakota, Oklahoma, Kentucky and South America (among many other locations). George McGhee is one of the few scientists with the skills to assemble the high volume of data into workable models in Earth history. The book is essential reading for those working on the puzzle of climate change.

Looked like an interesting book, but within a few pages, it was a disappointment. It would appear that the author is trying to popularize information about the two greatest extinction events in natural history, one in which almost all life on land disappeared. There's a lot of new research data there, and that's interesting, but he tends to get bogged down in details only a paleophylogenist could love: "Yet it can be seen in table 3.r that the zosterogrammids and cowiedesmids are more derived chilgonath millipedes...." His favorite word, occurring at least once every few pages is "plesiomorphic." In summary, too detailed for the casual, albeit educated and interested reader, and probably too "popularized" to serve as a review for those in the fields. I have only one doctorate, and it's not in paleontology, alas.

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