



**Climate Change - Biological and Human Aspects.** Jonathan Cowie. Cambridge University Press, New York, 2007, pp. xvi + 487; ISBN: 978- 0-521-69619-7 (ppbk), 978- 0-521-87399-4 (hdbk); US\$52.00/120.00.

This remarkable book about global warming was written by an erudite biologist rather than a physical scientist. Cowie has an extensive knowledge about how the various species of biota including humans on the earth have evolved over geological time. The result is a very valuable and original contribution about how climate change has affected the earth's biota in the past, what is now occurring and what is likely to occur in the future. It contains a valuable survey about how the various geological processes including climate change have altered the types of biota and their distribution over the past millions of years. It is not a book that can be read quickly as it is literally jammed with fascinating and unique information about how global climate change has occurred over and over again. The reader quickly senses that Cowie has a very clear mastery of his subject and that he is an excellent communicator. Consequently, his book should be a must read for those interested in the big picture about global climate change. It is not necessary to know anything about the subject. However, those readers with some background in global warming will have a better perspective about the objective of the author in organizing his book. It is a masterpiece in its subject area in the opinion of this reviewer and will be read for many years because much of the material will not become dated. There is only one serious criticism of the discussion and that concerns the author's failure to discuss the role of isostasy in determining the final equilibrium rise of the oceans due to various global temperature rise scenarios.

The author starts by providing an introduction to climate change and follows with a careful discussion of the various indicators of past climates. Two chapters follow on the periods before and after the Eocene-Oligocene extinction some 35 mya. He then discusses the present climate and biological change which is followed by a discussion of the warming now occurring and its likely future impact. A chapter on the factors causing the present warming discusses population growth, energy supply, human health, food security and how biology can be harnessed to reduce anthropogenic climate change. A final chapter deals with sustainability and the policies that have been evolved to date concerning this crisis. The international conferences that the United Nations has organized that led to the Kyoto Accord and where we are going are discussed in detail. There is a careful analysis of energy sustainability and the various future energy policy options. Finally, he deals with future human and biological change, and succeeds in providing a very clear and unbiased discussion of both the impacts and the alternative solutions. Many of his examples come from the British Isles since the author has worked as the head of Science Policy and Books for the Institute of Biology but he has many examples from elsewhere in the world. He has also acted as the spokesman for the biological learned societies to British policy makers.

This book deserves to be widely read as it provides an extremely important and valuable overview of what is happening to our planet due to the irresponsible misuse of valuable resources and fossil fuels for many years in the developed 20% portion of the world. Every scientist should read it carefully and then become involved in explaining what is happening to those unlikely to read about this subject. Sadly, it is unlikely that any politicians

will take the time and effort to read it. The members of the scientific community have a public responsibility to lobby them about what policies must be enacted to prevent further drift towards a doomsday scenario. The inadvertent global experiment with the excessive burning of fossil fuels must be stopped. Cowie has amassed so many pertinent facts concerning what is happening and what will probably occur that the reader is left feeling rather helpless as an individual. He makes it clear that the future is rather bleak unless we manage collectively as citizens of the world to band together to prevent the collapse of our society as we know it today. Readers should consider reading *Collapse – How Societies Choose To Fall Or Succeed* by Jared Diamond since this latter book puts a geographic and anthropological focus on the stresses and strains that global climate change will impose on the residents of planet Earth and force them to learn to work together if they wish to survive in the long term.

His final paragraph deserves to be quoted in part. *“If we are to comprehend and address climate-change concerns and the implications for species, including our own, then this understanding needs to come from science. It will not come from anything else. Science in many nations, including a number of highly developed ones, is not valued as it might be and in some instances is positively under attack. Indeed, even where it is supported it is increasingly being constrained. ... Yet if we are to see our global society survive the coming century (albeit transformed) without considerable suffering let alone denuded of many biological and ecological assets, then we are going to have to change the way we relate to both resource use and (scientific and technological) knowledge. These are equally formidable, but not impossible challenges. If we fail ... well someone else can narrate doom and disaster, at least as far as humans and many wildlife species are concerned. As for the rest of the biosphere, it will go on. Of that I am very confident.”*

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