

## Book Reviews

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### **From Greenhouse to Icehouse: The Marine Eocene-Oligocene Transition**

*Edited by Donald R. Prothero, Linda C. Ivany & Elizabeth A. Nisbitt*  
Columbia University Press (2003)  
ISBN 0-231-12716-2. 548 pages. Hardback. \$79.50/£57.00

At the Eocene-Oligocene transition, approximately 33 million years ago, a fundamental reorganisation of climate occurred which changed the Earth from a Greenhouse (Eocene) or ice free world, to an Icehouse (Oligocene) world characterized by the existence of a significant ice sheet on Antarctica. The record of this event can be found within the geochemical signature of marine organisms, from changing sedimentary facies, and from globally distributed pollen and plant remains. This book is made up of contributions from numerous scientists who attended the second Penrose Conference entitled the “Marine Eocene to Oligocene Transition” held at Evergreen State College in Olympia, Washington, USA from 17–22 August 1999. The volume examines the environmental changes associated with Eocene to Oligocene transition from oceanographic, climatic and palaeontological perspectives and addresses the following key questions:

What was the nature of the change during the transition?

Was it synchronous or diachronous?

Were there discrete events or did the changes occur over a long period of time?

What was the nature of the extinctions at the end of the middle Eocene, and during the early Oligocene?

How can records of this event be correlated and compared?

The work is intended for people who wish to examine the Eocene-Oligocene transition in detail. The contributions are diverse, generally well written and contain useful and relevant illustrations.

The editors have arranged the contributions in a geographical order which allows the reader to investigate the evidence for the greenhouse to icehouse transition on a regional scale. Part I - The Pacific Rim, includes contributions on regional chronostratigraphy, an examination of turnover patterns and biotic responses of marine gastropods, molluscs, echinoderms and cetaceans to the Eocene/Oligocene transition, the vegetation record of climate change from the Pacific Northwest and the climatic and environmental significance of sedimentary deposits. In Part II - The Atlantic, Gulf of Mexico and Caribbean, the

theme of biotic responses to the transition continues but is augmented by contributions to regional sequence stratigraphy and studies of glacioeustasy and temperature change derived from stable isotope analyses. Part III - The North Sea and Tethys, includes contributions on regional sequence stratigraphy, the stratigraphy of benthic foraminiferal events across the Middle-Late Eocene transition, and on the development of facies patterns of Middle Eocene to Lower Oligocene circum-Alpine shallow water carbonate environments. Data from Parts I–III are synthesized in Part IV - Causes and Consequences, which provides an excellent synthesis to the book.

This is a useful volume for graduate level students and scientific specialists researching in the field of palaeoclimatology and/or palaeoenvironments and I would certainly recommend it.

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### **Fishing South. The history and management of South Georgia fisheries**

*David Agnew*  
Government of South Georgia & the South Sandwich Islands (2004)  
ISBN 0-9547948-0-X. 126 pages. Softbound. £15/Euro20

This book successfully achieves what the title suggests but in doing so it adds a flavour imparted by the phrase on the title page "Published on behalf of the Government of South Georgia and the South Sandwich Islands". The book effectively presents the history of living resource exploitation around South Georgia and provides a number of well presented diagrams to illustrate the text. It is well written and can be digested in a couple of rewarding hours. I am not entirely sure who the target audience is but it does cover a lot of ground and thus provides information to scientists, managers and the general reader. Some of the scientific information is probably too detailed for managers and some of the management detail is almost certainly presented far more exhaustively than most scientists will feel the need for. It might also serve as a useful handbook for anyone wanting to make a fishing trip to South Georgia! There is a fairly comprehensive reference list and a useful glossary which also unravels most of the acronyms that seem to infest Antarctic literature.

In terms of the science, the treatment is somewhat uneven. The book delves into considerable detail in some areas, e.g. toothfish population genetics, but seems to skip over whole fields of research which are relevant to the

South Georgia fisheries. I was somewhat surprised that there was not more emphasis on marine research that has been conducted around South Georgia which sets the context for the fisheries, particularly those for icefish and krill. The variability of the marine ecosystem, its effects on target species and on their predators gets very little attention yet this is the context in which these fisheries are managed.

There is some repetition from the earlier section where an overview of the fisheries and their history is presented, and later sections where each of the fisheries is put into context. It would have been useful to have some of the current catch figures in the main body of the text instead of in the appendix. It may be just a personal bias but I felt that there was an imbalance in the way that the fisheries were dealt with. In terms of current fisheries, the krill fishery is by far the largest, has a long history and has the greatest potential for ecosystem effects yet it gets relatively little attention compared to other existing fisheries and even some potential (or even unsuccessful) fisheries eg. squid. This can be illustrated by the number of references devoted to each of the currently harvested species in Chapter 2: The Fish and the Fisheries: 33 references to toothfish, 10 for mackerel icefish and only 2 for krill. This may merely be a reflection of the current economic value of the resource and thus the potential revenue to the South Georgia

Government, but it neither reflects the volume of research that has been carried out around South Georgia nor the relative ecological roles of the species.

There are a small number of factual errors: in the Preface, the Commissioner for South Georgia and the South Sandwich Islands refers to unregulated fishing in the 1980s when this in fact refers to the period prior to the 1980s, and on page 78 the recent survey of the South Atlantic, the CCAMLR 2000 survey, is incorrectly identified as the BROKE survey.

The layout of the chapters is logical but the book seems to come to an end without any concluding remarks or summing up. There is little assessment of the future of the fisheries in South Georgia or discussion of what future threats to the ecosystem are likely to be.

Overall this book provides a wealth of information on fisheries around South Georgia and as such will be of interest to those who are interested in resource management in the Southern Ocean. Because of its perspective it concentrates rather too much on the here and now of management in the unusual circumstances of South Georgia but, provided this context is understood, it can be a useful reference volume.

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