

reasonably priced given the large number of illustrations and colored plates and its sturdy binding. The authors and publishers should be congratulated on this. Some more careful editing could have been undertaken; while the terms chaetae and chaetiger are used most often, there are places where the terms setae and setiger are used. Some references are lacking either a journal or title but, given the large number of authors involved, this is not surprising. In addition, some consistency in figures

would have been useful; most are great but they do vary in format and labeling.

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Advance Access publication June 18, 2007  
doi:10.1093/icb/icm008

**Reproductive Biology and Phylogeny of Gymnophiona (Caecilians). Jean-Marie Exbrayat, editor.**

Enfield: Science Publishers, 2006. 395 pp. ISBN 1-57808-312-5, 978-1-57808-312-1.

This book is the 5th volume in Science Publishers' *Reproductive Biology and Phylogeny*, a series in which each volume is dedicated to provide a comprehensive and accurate synthesis of our knowledge of one animal group. Gymnophiona (caecilians) are probably the most poorly known amphibian subgroup, and this volume is "perhaps" the first and only book that specifically deals with phylogeny and reproduction of this vertebrate subgroup. The editor of this volume, Jean-Marie Exbrayat, is a renowned researcher in the field of reproduction and development in caecilians. He has skilfully put together a series of chapters on caecilian phylogeny and biology by well-known authorities. This book should serve as a very convenient and comprehensive source of information on phylogeny, morphology, reproduction and development of caecilians. A feature that will make this volume attractive to readers who are interested in caecilian phylogeny and/or reproduction, is the inclusion of "concluding remarks" at the end of some chapters.

The volume is organized into 12 chapters. In the introductory chapter, M. H. Wake provides in brief the history of research on caecilian life history and reproduction. In the second chapter, M. Wilkinson and R. A. Nussbaum provide a most interesting and comprehensive review of caecilian phylogeny and classification. Chapter 3, by J.-M. Exbrayat and J. Estabel, begins with an overview of the anatomy common to all caecilians, and provides a thorough description of the male reproductive system. Chapter 4, by a group of researchers from India, summarizes and very nicely illustrates the morphological and functional aspects of the Mullerian

duct in the adult male. Of all vertebrates known today, only caecilians show this unique feature. The evolutionary significance of this characteristic has been debated. Chapter 5, by J.-M. Exbrayat is a treatise of the known facts on the reproductive endocrinology of caecilians. Although there is lack of data on hormonal factors, on the basis of morphological studies it is speculated that external factors trigger the cascade of endocrine events leading to reproduction. Chapter 6 on spermatogenesis, by several authors, provides morphological details of this process in caecilians but also indicates the great paucity of information on the dynamics and regulation of spermatogenesis. Chapter 7, by D. M. Scheltinga and B. G. M. Jamieson, is a beautifully illustrated survey of the ultrasonic features and phylogeny of caecilian spermatozoa pointing to the existence of some plesiomorphic characters. This chapter in particular seems to have more detailed pictures and diagrams than the others. Chapter 8, by J.-M. Exbrayat, is a brief and informative, without being overwhelming, exposition of data on oogenesis and folliculogenesis with the major details coming mainly from *Typhlonectes compressicauda* and also from *Ichthyophis beddomei*. The author competently makes it clear that much remains to be done. Chapter 9, by E. Anjubault and J.-M. Exbrayat, is a brief analysis of the gonadal development exclusively in *T. compressicauda*. Whereas other species of Gymnophiona have not been exploited in this field yet, it is here speculated that a delayed sexual differentiation of gonads in the order Gymnophiona might explain the persistence of Mullerian glands in adult males. In chapters 10 and 11, the reproductive modes of caecilians have been nicely reviewed. Many species are viviparous, and chapter 11 emphasizes clearly that *T. compressicauda* is the caecilian most adapted to the viviparous mode of reproduction. The volume concludes with chapter 12 on fertilization and development comprehensively reviewed by J.-M. Exbrayat. The only shortcomings of

this volume seem to be the poor quality of some photographic illustrations in chapters 4 and 5 and the total lack of end comments to call attention to a hot area of research in many chapters.

The scarcity of scientific data, as compared to that available for other amphibian orders, regarding any aspect of Gymnophiona can logically be accounted for the enormous difficulties encountered in collecting, let alone the possibility of rearing these “fossorial” animals of the tropical regions under laboratory conditions. Thus, this book should be as useful and interesting to the expert exploring caecilian phylogeny

and reproductive biology as it should be to students and to the biological and non-biological community at large.

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Advance Access publication June 1, 2007

doi:10.1093/icb/icm009

### **Extinction & Biogeography of Tropical Pacific Birds. David W. Steadman.**

Chicago: University of Chicago Press: \$45 (paper)  
ISBN: 978-0-226-77142-7 \$110 (cloth) ISBN: 978-0-226-77141-0.

Among almost 600 pages, two quotes characterize David Steadman’s synthesis and analysis of avian biogeography in Oceania. “Pre-historic bird bones (the heart of this book)” and “extinction of birds, a topic that will dominate this book.” What a steal, to have so much information, data and interpretation packed into a single moderately priced volume. Although Steadman is well known as an avian paleontologist, this book represents a tour de force presentation of historical biogeography covering about a quarter of the globe, as well as analysis leading to Steadman’s conclusion that it’s all about extinction. This book is provocative and particularly the last third will certainly be controversial, attacking central beliefs or dogmas of island biogeography. Whereas Ernst Mayr (1945), whose main area of field research was also in the southwest Pacific, had the impression that the avifaunas of Oceania were intact, Steadman shows the opposite. Surviving avifaunas are merely the tip of the historic iceberg, and most extinctions have occurred relatively recently and at the hand of humans, both “natives” and Europeans. Having a long-standing interest in Micronesia and being an avid birdwatcher, the Pacific Islands have posed both an intellectual and “athletic” challenge for me. There are simply too many of them. I agree with the author: “No place on earth is so geographically perplexing.” How can you get your hands around hundreds of species on thousands of islands, particularly when the names of islands and their geopolitical

boundaries keep changing. Should you approach it geographically or taxonomically. Steadman solves this dilemma by doing both.

*Extinction & Biogeography* is divided into four parts: (1) four chapters on geography, ecology, demography, archaeology, and avian data sources, (2) four regional chapters: Melanesia, West and East Polynesia, and Micronesia, (3) seven chapters on taxonomic groups, and (4) seven chapters on biogeography and conservation—including the analyses and critique of island biogeography. This is a big, data-rich, thought-provoking, profoundly disturbing, and hugely enlightening book. Although not a page-turner, it is clearly written, yet detailed, with over 1800 references, many by Steadman himself.

Steadman pulls together geology, physical oceanography, and historical climatology, with archaeology, paleontology, palynology, taphonomy, and even linguistics to weave a tapestry of extant, recently extinct, and prehistoric avian occurrence on many islands of the Pacific. It is apparent, and he repeatedly cautions, that so much remains unknown about the temporal, spatial, and taxonomic aspects of the paleontology of Oceania. There is a warning that many terrestrial biogeographers have recognized, but which applies to archipelagos such as Oceania: what we see today may have little relevance to their recent history. The biogeographic signal has been scrambled by human introductions and extinctions. In the light of so much uncertainty he could have tempered his speculations and conclusions.

Oceania’s flora and fauna are largely Old World in origin. Steadman identifies isolation as an important variable influencing the prehuman avian (and also plant) species diversity. The Pleistocene to Recent period has been one of drastically fluctuating climate