

Moreover, regarding striped species overall, why do smaller-bodied birds (e.g., wood warblers, sparrows) often have streaks, whereas relatively large-bodied species (e.g., ducks, geese, rails, pheasants) tend toward transverse bars? My own research on the evolution of pattern configurations focuses on these kinds of questions, so I am inclined to agree with Owen's assessment. However, Chapter 1, on natural selection and coloration (Bortolotti), does discuss flash and deflective marks, countershading, disruptive coloration, and the evolution of head patterns, with the latter drawing on the seminal work of E H Burt, Jr (1986. *Ornithological Monographs* 38:1-126).

The current volume draws its inspiration from the well-worn trail of functional explanatory models. However, as both Dale and Bortolotti point out, color pattern variation can be functionally neutral. Furthermore, there is growing evidence that developmental constraint, rather than random genetic variation, may be the generator of plumage pattern expression, with selection playing only a secondary role, as it presumably fine-tunes the pattern elements presented to it (T Price and M Pavelka. 1996. *Journal of Evolutionary Biology* 9(4):451-470). Accordingly, the expanding field of evolutionary developmental biology (evo-devo) may have much to contribute to our understanding of the evolution of plumage pattern and coloration. Although the present volume will undoubtedly serve to advance future research in avian coloration, it may also signal the need to relax the traditional adaptationist paradigm to uncover significant new insights. In the meantime, *Bird Coloration, Volume 2*, is an important collection that offers a detailed synthesis of a fascinating field of inquiry. It will be particularly appealing to ornithologists with an interest in avian coloration, but also to biologists and naturalists who are struck by the incredible array of color patterns in the animal world.

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REPRODUCTIVE BIOLOGY AND PHYLOGENY OF GYMNOPHIONA (CAECILIANS). *Reproductive Biology and Phylogeny Series, Volume 5*.

Edited by Jean-Marie Exbrayat. Enfield (New Hampshire): Science Publishers. \$108.00. xii + 395 p; ill.; index. ISBN: 1-57808-312-5. 2006.

This volume is the fifth in a series whose purpose is to provide a general textbook that uses phylogeny and classification as a framework for understanding diverse aspects of reproductive biology. The Gymnophiona, commonly called caecilians, are one of three extant orders of amphibians, along with Urodela (salamanders) and Anura

(frogs), both of which were covered in earlier volumes of the series. Caecilians, however, have received much less attention than other amphibians and are represented by some 150 circumtropically distributed, limbless, and mostly fossorial forms.

I wondered if this volume would be merely a translation of Exbrayat's excellent *Les Gymnophiones: Ces Curieux Amphibiens* (2000. Paris (France): Boubée) and, indeed, Exbrayat does author or co-author eight of the 12 chapters in the new book. This volume, however, reviews a substantial amount of new information on caecilians that has appeared since 2000, and contains chapters by other leading authorities. Noteworthy among these are Wake's introductory chapter on the history of research on reproduction and development in caecilians, Wilkinson and Nussbaum's discussion of phylogenetic relationships, and Scheltinga and Jamieson's chapter on cytology and phylogeny of spermatozoa. Two chapters describe spermatogenesis in caecilians and the unique male Mullerian gland, which secretes a seminal fluid. Exbrayat and his coauthors provide outstanding reviews of reproductive anatomy, endocrinology, oogenesis, fertilization, development, and parity, including the extraordinary story of gestation in *Typhlonectes compressicauda*, in which the young in utero sequentially rely on yolk, ingest the uterine wall, and develop placental attachments with their external gills.

My only complaint is that the quality of some of the micrographs is poor, due to a lack of contrast, size of reproduction, poor labeling, or focus. Despite the high price, anyone interested in caecilians should have this book.

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FIELD GUIDE TO AMPHIBIANS AND REPTILES OF THE SAN DIEGO REGION. *California Natural History Guides, Volume 89*.

By Jeffrey M Lemm. Berkeley (California): University of California Press. \$60.00 (hardcover); \$24.95 (paper). xiv + 326 p; ill.; index. ISBN: 0-520-24573-3 (hc); 0-520-24574-1 (pb). 2006.

REPTILES AND AMPHIBIANS OF EAST AFRICA. *Princeton Pocket Guides*.

By Stephen Spawls, Kim M Howell, and Robert C Drewes. Princeton (New Jersey): Princeton University Press. \$24.95 (paper). 240 p; ill.; indexes of scientific and English names. ISBN: 0-691-12884-7. 2006.

This compact volume is a guide to the reptiles and amphibians of Kenya, Tanzania, Uganda, Rwanda, and Burundi. It draws heavily from the authors'