



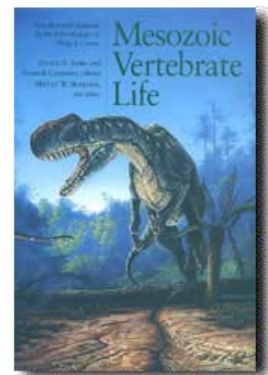
Mesozoic Vertebrate Life by John R. Hutchinson

Darren Tanke and Kenneth Carpenter (eds.)
Indiana University Press, 2001, 352 pp.
0-253-33907-3, \$49.95

After 25 years of research on dinosaurs and other aspects of Mesozoic vertebrate life, Royal Tyrrell Museum Paleontologist Phil Currie received quite a surprise late in 2001. His friends honored him by secretly preparing a volume celebrating his considerable contributions to the field. This volume, **Mesozoic Vertebrate Life**, is part of an expanding series of "Life of the Past" paleontology books published by Indiana University Press, conceived and master-edited by Jim Farlow of Indiana University-Purdue University, Fort Wayne. As the book's acknowledgments note, Phil's wife Eva Koppelhus was a co-conspirator in bringing this surprise to fruition, along with an impressive array of artists and scientists from around the globe. It's a touching story and a striking symbol of the respect and many friendships Phil has cultivated so far.

The volume is a collection of papers, from minor notes to descriptions of new species, review articles, philosophical essays, and other analyses, but mostly original research. **Mesozoic Vertebrate Life** is organized into sections on theropod, sauropod, and ornithischian dinosaurs, plus general sections on Mesozoic faunas, paleopathologies, ichnologies, and a final section of two papers on "Dinosaurs and human history." In the middle of

the volume, as is common in the "Life of the Past" series, there are 13 pages of full color plates including original and republished artwork by many prominent paleo-artisans, plus three lovely sets of color photos of the "feathered dinosaurs" from China.



Appropriately, near the end of the volume there is an extensive and well-structured bibliography of Currie's books, technical papers, and nontechnical publications. The 12 pages of this bibliography demonstrate of the scope of Phil Currie's work: 16 books as first author or editor, many papers on animals ranging from basal tetrapods to birds, and a lifelong commitment to public education through the popular literature. Not surprisingly, as a technical volume, few papers in **Mesozoic Vertebrate Life** will be of interest to non-specialists, although the final two entries are understandable even to non-scientists. The attractive artwork alone will attract some enthusiasts to cough up the reasonable \$50 hardcover price. Because of the diversity of studies in the volume, anyone studying dinosaurs will probably

find several papers matching their research interests. There is no unified theme or much cross-referencing connecting the papers, except that almost all of them focus exclusively on extinct dinosaurs.

One obvious omission from the volume is that there is barely a mention of the animals that Currie's masters and doctoral theses focused on: the synapsid "pelycosaurs" and assorted diapsid reptiles such as **Tangasaurus** and **Youngina** (although Bob Carroll does provide an informative foreword that mentions Phil's early research on these animals under Bob's supervision). Additionally, only one paper (Padian et al., with the color plates) discusses the feathered dinosaurs that have captured Phil's attention so prominently in recent years.

The papers vary widely in length, technical level, and overall scientific quality as well as subject matter. Consequently I cannot offer detailed commentary on each of them, but I will discuss some that will draw the most attention from readers. Dan Chure offers a succinct and convincing argument that AMNH 5780, widely considered to be the only existing type material for **Laelaps trihedron** Cope 1877, is indistinguishable from **Allosaurus** teeth and is not part of the type material, so Cope's species rests on shaky taxonomic ground. Hans Larsson provides a detailed description of a brain endocast of **Carcharodontosaurus**, and incorporates this into a larger dataset to show how the brain evolved on the line to crown group birds. The brain anatomy and dimensions of **Carcharodontosaurus** seem grossly similar to crocodylians, unlike the more derived brains of coelurosaurian dinosaurs, including birds. Likewise, Peter Makovicky describes similar features in a braincase of **Montanaceratops**. Phil Currie's research has frequently delved into

the intricacies of skull anatomy in dinosaurs, so these are fitting entries to the volume.

Other entries interpret dinosaur fossil anatomy and function, with varying degrees of rigor. Carpenter and Smith present their long-awaited analysis of the forelimb anatomy of **Tyrannosaurus rex**. Their description and illustrations of osteological features are useful, but they have rather uncritically used avian muscle anatomy to reconstruct **Tyrannosaurus** myology, eschewing methodological approaches such as Witmer's extant phylogenetic bracket. As such, the significance of their biomechanical analysis will remain controversial. Yet their reconstruction was barely used for the biomechanical analysis anyway, and the analysis itself says little other than that **Tyrannosaurus** had some freedom of joint motion allowing its forelimbs to exert forces of questionable magnitude and utility relative to its size.

Padian et al. describe previously unrecognized skeletal and integumentary features of the Chinese "feathered dinosaurs." Their analysis refutes two controversial hypotheses, that feathers evolved for flight and that the fibers on **Sinosauropteryx** (and other coelurosaur) specimens are merely collagenous or non-integumentary structures. They consider other uses of early feathers such as insulation, and infer how these feathers and various skeletal elements contributed to the evolution of flight.

Farlow uses morphometrics on theropod foot skeletons and tracks to show that it is unreasonable to assign trackmakers to taxa based on size alone. He argues, however, that other lines of evidence such as track vs. body fossil correspondences in space and time can be useful. Farlow applies this approach to Comanchean footprints of large theropods and asserts

that **Acrocanthosaurus** is the "most likely maker" of these tracks, having a wide home range that might have spanned many types of habitats and ichnofacies.

Descriptive reviews and compilations of data from ornithomimosaur jaws (Hurum), Montanan oviraptorosaurs (Varrichio), tyrannosaurid systematics (Holtz), juvenile hadrosaurs from Dinosaur Provincial Park (Tanke and Brett-Surman), Albertan, Two Medicine, and North American dinosaur faunas (Ryan and Russell; Trexler; Lehman), pathologies of theropod bones (Rothschild et al.; Molnar) and amniote eggshells (Hirsch), and quadrupedal ornithopod trackways (Lockley and Wright) are all useful resources for specialists interested in these particular subjects. The final chapter by Sarjeant is an entertaining history of the portrayal of dinosaurs in popular fiction since their discovery. He points out that dinosaurs did not become huge media stars until recently, especially in the 1970s, and that like science fiction and actual technology, dinosaur fiction sometimes corresponded to future scientific ideas about dinosaur biology.

As usual in a festschrift volume, some new species are dedicated to Phil Currie. Skeletal elements from a new basal theropod (**Quilmesaurus**... named after Quilmes, Currie's favorite cerveza?) and a new bird trackway (**Aquatilavipes**, coined by Currie in 1981) each receive the species (or ichnospecies) name **curriei** in honor of Phil's work on these subjects. All things considered, this volume is not an

urgent purchase for dinosaur specialists, but it should become a part of their library. Considering the fair price and production quality, there is no need to wait for a paperback version. Paleontologists, hobbyists, and others working outside of the clade Dinosauria have no strong reason to buy it. Find a copy of it and read the Carroll foreword and the bibliography to learn more about Phil Currie, or scan the artwork and read the Sarjeant entry for some dinosaurian fun.

This volume provides some tantalizing, but not shocking or revolutionary, glimpses into the life of the Mesozoic, a life that we'd all love to know better. As for Phil Currie, if you've met him you want to get to know him well too. This book honors him by showing how he has inspired a generation of scientists and artists. A volume in 2026 celebrating Phil's work over the next 25 years will be truly stunning. Then perhaps we'll be the ones who are surprised, by how much he means to vertebrate paleontology.

Links of interest to readers:

- Royal Tyrrell Museum
<http://www.tyrrellmuseum.com/>
- University of Calgary, Department of Geology and Geophysics
<http://tabla.geo.ucalgary.ca/>
- The Jurassic Foundation (research grants for studying Mesozoic life)
<http://www.magtechcomputers.com/jurassic/grant.htm>
- Account of the Phil Currie surprise, by Tom Holtz
<http://www.cmnh.org/fun/dinosaur-archive/2001Jul/msg00243.html>