

DINOSAUR PROVINCIAL PARK: A SPECTACULAR ECOSYSTEM REVEALED

Reviewed by Andrew A. Farke

Edited by Philip J. Currie and Eva B. Koppelhus
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Dinosaur Provincial Park, an island of outcrop in the middle of western Alberta's prairie, hosts a staggering diversity of Cretaceous life. Although the eponymous dinosaurs of the park are the fossils best known by the public (as well as many paleontologists), a diversity of non-dinosaurs is also known. *Dinosaur Provincial Park: A Spectacular Ecosystem Revealed*, edited by Philip J. Currie and Eva B. Koppelhus, presents a comprehensive overview of this remarkable area.

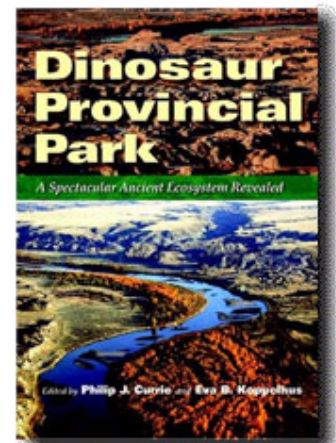
The book is divided into three parts: Background, Flora and Fauna from the Park, and Interpretations. "Background" covers the park's history, geology, and microfossils. Philip Currie's essay on the history of park research is especially charming, with a number of personal anecdotes. The other papers in this section cover local geology in some detail, but for me the most fascinating contribution was "Identifying Lost Quarries," by Darren Tanke. Tanke's paper details his and others' efforts to relocate historic quarries within the park. Through careful recovery of newspaper scraps and other quarry garbage (followed by painstaking searches through archives), a number of quarries have been relocated. Beyond general historical interest, this "quarry sleuthing" offers a second chance to collect detailed stratigraphic, geological, and locality data, sometimes decades after the original collections were made.

Any other book on a terrestrial Mesozoic ecosystem might fall prey to "dinosaur mania." However, "Flora and Fauna of the Park," the systematic

section of this book, is remarkably balanced. Of 344 pages in this section, 37 pages are devoted to plants, 27 pages to mollusks, 141 pages to non-archosaurian vertebrates, and 139 pages to archosaurs (including eggshells and ichnofossils).

I believe this may one of the first systematic syntheses of a Cretaceous fauna in which the verbiage devoted to clams nearly matches that devoted to tyrannosaurs. Although this treatment means that many typically undiscussed groups are fairly treated, other groups of widespread interest receive little discussion. For instance, only three short paragraphs, without figures, comprise the coverage of the park's bird fossils (but to be fair, the birds are quite poorly known relative to other theropods). All kidding aside, most chapters present a comprehensive literature review with a healthy sprinkling of new information. This maximizes the accessibility of the chapters, and enhances the book's value for anyone interested in Mesozoic ecosystems.

Part Three of the volume, "Interpretations," discusses a variety of topics, including taphonomy, documentation methods, and chronostratigraphic



trends in the fauna. Altogether, they unite the previous chapters under a dominant message: stratigraphic, temporal, and geographic data are crucial for interpreting Mesozoic ecosystems. Many of the volume's chapters contain detailed stratigraphic information for a host of specimens and localities. In some cases—such as for ceratopsian dinosaurs—this has allowed testing of hypotheses regarding taxonomic synonymies. The final chapter, by Currie and Russell, highlights stratigraphic changes in the dinosaur fauna and provides directions for new research. Although overall sample sizes are still too small for statistical analysis, it is exciting to think that the fossils in the park may eventually allow paleontologists to track co-evolution in a dinosaur fauna (similar to efforts for Tertiary mammalian fauna in the Bighorn Basin and other locales).

As a further acknowledgement of the importance of geospatial data, the volume is accompanied by a “bonus CD” with quarry photographs, digital maps, and locality data. In this day of web-based supplementary information (which often disappears at the whim of a web manager or downed server), the CD-ROM is a welcome addition. The user interface is a basic HTML screen, which is good in that it ensures compatibility with a maximal number of browsers. However, a severe shortcoming of the CD is that none of the photos have accompanying documentation, and there is no interface with which to preview the images (although the latter is easy enough for any computer-savvy user). So, I was left paging through a directory listing of images with cryptic names such as, “Q234_350.jpg.” I eventually inferred that this was a photograph of Quarry Q234 in Dinosaur Provincial Park (DPP), but there is no way to be entirely certain. More complete captioning, such as the direction and date of the photograph, certainly would have been desirable.

A more useful feature on the disk—indeed, one that will be invaluable for future workers—is a quarry by quarry listing of nearly all historic and a goodly number of more recent sites. Not only are

site numbers given, but also specimen identifications and UTM coordinates (with elevation). These are the same data used in many of the papers in the volume, so it offers an excellent chance for the motivated user to reproduce or extend the analyses conducted by the volume's authors.

Returning to the book itself, the illustrations are generally quite good, and many previously unillustrated specimens are presented. Similar works are often plagued by endless repetitions of “classical” illustrations, and most of the chapters avoid this problem. A series of 20 color plates presents some attractive reconstructions of the Park's animals, but very little information of scientific value (beyond two plates devoted to the park's pollen).

One peculiarity of the volume is that it contains only one cladogram (p. 237, for extant squamates). Given the book's emphasis on geological and ecological paleontology (versus phylogenetic and functional paleontology), this is not surprising, nor is it a bad thing. However, it does reflect a rather isolated view of the DPP ecosystems. DPP (although certainly one of the paleontologically richest and best-studied locales) is not the only Late Cretaceous terrestrial community. Thus, I often found myself wondering exactly how the DPP plants and animals fit into the larger world during the late Cretaceous; little was done to address this issue.

All in all, this book is particularly admirable for its broad and relatively even-handed taxonomic coverage, with thorough documentation in a stratigraphic context. This serves as a wonderful example of what can be achieved with integrated geological and paleontological approaches. A healthy combination of review, synthesis, and new data results in a highly accessible and appealing piece of work. It is particularly illuminating for anyone wishing to get a handle on the sheer diversity of life present in DPP. As such, this volume is a worthy addition to any paleontologist's bookshelf.

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