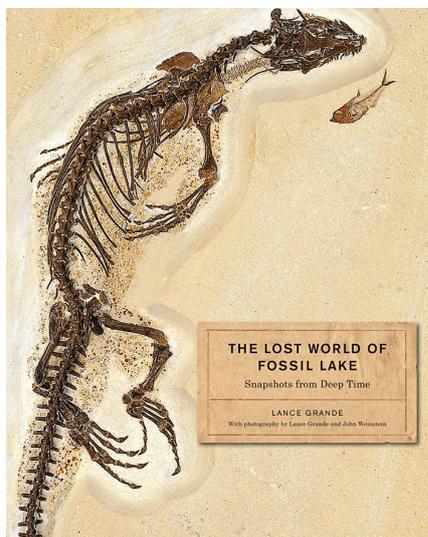




BOOK REVIEWS

Grande, L. 2013. *The Lost World of Fossil Lake: Snapshots from Deep Time* – Chicago, University of Chicago Press

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Perhaps the greatest treasures in paleontology are not individual skeletons of spectacular dinosaurs, but the incredible treasure troves of fossils from the famous “Mother Lode” deposits of fossils known as *Lagerstätten*. There are about a dozen or so such famous localities around the world, where the fossils have undergone extraordinary preservation. Most preserve the animals in complete articulated state, undisturbed by scavengers and currents, and some even preserve original soft tissue and original colors. These incredible accumulations of fossils tell us so much more than an individual skeleton, because they preserve entire organisms virtually intact, often exhibiting different kinds of behaviors (such as the fish swallowing other fish found in the Green

River shales, subject of this book). In addition, they give a nearly unbiased cross-section of nearly all the life in a region at a given time, not filtered by how much hard tissue the organism had that might enhance its chances of preservation. Bit by bit, color-illustrated books of many of these legendary localities, such as the Burgess Shale, the Solnhofen Limestone, and the Messel localities, have been published. Such books are extremely important, because they allow anyone to see the full range of incredible specimens that might otherwise require many museum visits.

Add to this list Lance Grande’s new book ‘The Lost World of Fossil Lake: Snapshots from Deep Time.’ It documents nearly all the important fossils from the legendary deposits

of the Green River Formation, middle Eocene lakebeds that once covered northwestern Colorado, northeastern Utah, and southwestern Wyoming. Ever since his grad school days at the American Museum of Natural History in New York (where I was a fellow graduate student), Lance has been doing research on Green River fish. Now he is the world's expert on everything Green River, and he is now Curator of Paleontology at the Field Museum. However, as he describes in his book, his love of the Green River goes back to his college years, when Prof. Bob Sloan of the University of Minnesota hooked Lance on paleontology after Lance brought him a Green River fish to identify. The book reflects this lifetime of research and experience in the Green River and its fossils, and presents many new insights as well as things that expert paleontologists might already have known.

The book is organized into a few introductory chapters, covering the basics of the geology of the Eocene Green River lake system, the stratigraphy of the formation and the taphonomy of the Fossil Butte Member (the richest unit in the formation). It also covers the history of collection and description of fossils from the Green River, going back to the founders of paleontology in the United States, Joseph Leidy, Edward D. Cope, and Othniel C. Marsh. Later collectors (including many of the modern commercial collectors) are also discussed, since Grande has developed good relations with nearly all of them, and they in turn have given most of their scientifically important specimens to public institutions, rather than sell them on the market. In this context, it is interesting to see how Grande handles the controversial issue of commercial collecting in vertebrate paleontology. Most of the commercial operations in the Green River have a history of good relations with professional paleontologists, and willingly donate the specimens of scientific importance (in large part due to Grande's diplomacy). This is in contrast to the large number of commercial collectors who are infamous for poaching specimens, or for selling scientifically irreplaceable specimens and illegal specimens in auctions to rich celebrities and millionaires. The entire issue has become very divisive within the membership of the Society of Vertebrate Paleontology (SVP). The result is a hard-line position by

most professional vertebrate paleontologists that discourages commercial collecting entirely, and regards all of it as poaching science from the public trust. Grande is in the rare position of standing between both camps, trying to keep his friends in the commercial world happy without alienating the professional paleontologists.

The bulk of the book is a gorgeous sequence of chapters with excellent color photos of nearly all the taxa represented in the Green River beds, from bacteria and arthropods and molluscs to the major groups of vertebrates (especially fish) and even the plants. The specimens are incredibly well preserved, especially because most are complete and articulated, and some show evidence of soft-tissue preservation. Some of the fossils are very familiar to paleontologists, such as the type specimen of the bat *Icaronycteris*, which was discovered in the early 1930s, but took Princeton paleontologist Glenn Lowell Jepsen almost 30 years to publish it in 1966 (a common phrase for a project that is postponed forever in our profession is "When Jepsen publishes the bat"). Two things surprised me as I read about the specimens pictured in the book. One is that a surprising number of really important specimens are still sitting in museums, never formally described! This includes a complete articulated specimen of a cimolestid with an extraordinary long prehensile tail in the Field Museum—yet no one has ever worked on it! There are also gorgeous bird specimens that have not yet been identified, and lots more work to be done. The other surprise is in the captions: Grande indicates the catalogue number of specimens in museums, but a surprising number of really important ones are still in private hands, with casts residing in museums. This includes the caiman *Tsoabichi greenriverensis*, recently described by Chris Brochu. One of its best specimens is not in the public domain.

If I have one pet peeve about the book, it is the decision by the publisher to put most scientific and technical terms in ALL CAPS. This would make sense if this were a college-level textbook, where you need the specialized words the words keyed to a glossary (as was done here). It seems out of place in a book intended for the general audience, and disrupts your concentration as you read.

All in all, Grande's book is a welcome addition to the paleontological literature, giving us the most recent information about this legendary set of fossil beds. It is written at a level that is comprehensible for amateurs, yet contains most of the technical information required by professionals. It belongs on the reference shelf of any paleontologist alongside their books on the Burgess Shale, the Solnhofen Limestone, the Messel beds, and other legendary *Lagerstätten*.

Grande, L. 2013. The Lost World of Fossil Lake: Snapshots from Deep Time. – Chicago, University of Chicago Press. 425 pp. Price \$ 45.00 (<http://press.uchicago.edu/ucp/books/book/chicago/L/b014707097.html>).