

## Book Review

THE RISE OF MARINE MAMMALS: 50 MILLION YEARS OF EVOLUTION. Annalisa Berta. Johns Hopkins University Press, Baltimore, Maryland, USA, 2017. ISBN 9781421423258, 98 pp.

To paraphrase Dickens, “It was the worst of times, it was the best of times.” Perhaps “worst of times” might be a bit hyperbolic and dramatic, but certainly there’s been a worrying trend (at least to me and a few other observers) over the last couple of decades. Advances in molecular biology, both in techniques and subsequent discoveries, have revolutionized how we do biology today. This is certainly a good thing, at least on the face of it. The down side, the part that I lament, is there has been a concomitant de-emphasis (in terms of university course offerings, academic positions, research funding, etc.) in the areas of paleontology, field biology, collections-based research, systematics, and the taxon-based “ologies” (e.g., mammalogy, ichthyology, herpetology, etc.) (Prothero, 2009; Drew, 2011; Kemp, 2015; Fleischner et al., 2017).

It was against this backdrop of doom and gloom that I received my copy of Annalisa Berta’s newest book, *The Rise of Marine Mammals: 50 Million Years of Evolution*. My very first thought was to wonder if the title, *The Rise of Marine Mammals*, was an homage to Rose and Archibald’s (2005) *The Rise of Placental Mammals* (also of Johns Hopkins University Press), a worthy tribute if so intended. My second thought was to admire the aesthetics of the book. As a nonrecovering bibliophile, I was favorably impressed by the book’s noncontent qualities: dimensions, cover art, layout, font, and paper stock (yes, these things do make a difference!).

More importantly, I was most impressed by the content of the book from several standpoints. Stylistically, the book is exceptionally well written. This feat is all the more remarkable once you realize that in a book such as this (dealing with paleontology, taxonomy, and systematics), virtually every paragraph is chock full of esoteric taxonomic names. This can be overwhelming and confusing for some readers, but Berta’s engaging style of writing makes this information accessible to readers of all backgrounds. The primary narrative flows like a good detective novel, with genus names as the characters in the story.

The book is very well referenced, another challenge given the explosion of publications

about marine mammal evolution in recent years (more on that later). Berta cites most of the key papers, providing a comprehensive review of the literature.

The book is nicely illustrated with high-quality figures, a tribute to both Berta and Graphics Editor Jim Sumich. As much as I love the primary literature, with its line drawings of bone fragments and skull diagrams, I imagine the general public may not feel as fascinated as me. In *The Rise of Marine Mammals*, there is an abundance of photographs and diagrams that superbly complement the text (along with, yes, the requisite bone fragments, skull diagrams, and cladograms). Moreover, the use of artistic reconstructions of long-dead animals into lifelike renderings in habitat-appropriate backdrops brings these animals back to life in a way that is certain to appeal to a broad audience (and specialists as well).

The book is comprised of seven chapters. Chapter 1 covers introductory material on geology, paleontology, and evolution. Berta provides an excellent overview of phylogenetic systematics (cladistics). Chapters 2 through 6 deal with various taxonomic groups of fossil marine mammals. Chapter 7 is quite relevant to modern times: the influence of climate change and other human impacts (among other drivers) on marine mammal diversity.

The chapters are followed by a “Classification of Fossil Marine Mammals” (comprised of seven pages, illustrating the huge diversity of extinct forms!), a glossary, a list of references (arranged by chapter), and an index. For those creationists who continue to make the ridiculous claim that there are no missing links or intermediate fossils, I would point them to this book in general and the “Classification” section in particular. The evolutionary transition of marine mammals from fully terrestrial ancestors to fully aquatic modern species is now among the best documented in biology.

In today’s molecular world of PCR, genetic sequencing, DNA barcoding, etc., paleontology may seem like a quaint and archaic scientific discipline. Some might make the case that the glory days of paleontology (at least for dinosaurs) were the late 1800s, with bigger-than-life characters such as Othniel Charles Marsh, Edward Drinker Cope, and Richard Owen leading the way. Well, as it turns out, the glory days of marine mammal

paleontology are right now (if you include the past 30 years as part of “right now”). Berta makes quite clear the quantity, scope, and significance of discoveries in this field in recent years. She also points to the synergies that have arisen from an integrative and collaborative approach with other disciplines (e.g., molecular biology) and cutting-edge technologies (e.g., laser scanning). Despite my opening “worst of times” scenario, Berta’s book is a reaffirmation of all that is good in the world today (at least in the worlds of paleontology, field biology, systematics, and comparative anatomy). These are, indeed, the “best of times” for marine mammal paleontology. In fact, this book is the latest in a series of book-length treatments on marine mammal evolution in recent years (e.g., Thewissen, 1998, 2014; Berta, 2012; Berta et al., 2015; Marx et al., 2016).

I don’t really have any criticisms of consequence of this book. In Figure 1.4, the diversity of desmostylians is misrepresented. Regarding the list of references (literature cited) at the end of the book, if the references are separated by chapter (as Berta has done), then I prefer the references to be listed immediately following each chapter. If the references are provided at the end of the book, then I prefer the references to be compiled into one bibliography.

I enthusiastically recommend this book to anyone interested in marine mammals, paleontology, evolution, or just biology in general. In closing, I’d like to offer another paraphrase of a well-known expression: “Paleontology is dead; long live paleontology!”

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