

The Inner Bird – Anatomy and Evolution

By G. W. Kaiser. 2007. UBC Press, University of British Columbia, 2029 West Mall, Vancouver, British Columbia V6T 1Z2 Canada. 386 pages. 85 CAD. Cloth.

Although not as richly illustrated as Feduccia's 1999 book on bird evolution, Kaiser's book is an up-to-date summary of the evolution of birds, including both sides of some of the debates in the field. As its title suggests, the book has little to do with plumage. Only one chapter discusses feathers at any length, presumably because plumage has contributed little (though ever-increasing amounts) to our understanding of bird evolution, relative to the bones, and now the use of DNA. It is the bones that dominate the other chapters, with only passing discussions of soft tissue systems like gas exchange, muscle and digestive.

The book is well organized from basic skeletal anatomy through the dinosaur-bird integrate, to adaptations of birds which allow them to exploit different environments. The chapters of the first section, *What is a Bird*, provide a good anatomical background to the understanding of the future chapters on avian evolution, as largely interpreted by the bones of the fossil record. The author also draws parallels between the extant and the extinct, helping to infer how the latter lived. There is plenty of space devoted to comparing and contrasting birds with dinosaurs.

The frequent references to the primary literature (and a correspondingly large list of references), suggests a thoroughly-researched work. Having said that, there are more than a few (but not a lot of) factual errors. For example, the author claims that feathers are not evolutionarily derived from scales, but hair is; in reality, the reverse is largely considered to be true. Semicircular canals, despite being part of the ears, have nothing to do with hearing, as the author suggests. Double-headed ribs are not unique to birds and dinosaurs, they are widely distributed among the tetrapods. Most of the errors I found were anatomical — it's not clear to me if the cause of this is that the author is a seabird biologist who does not specialize in anatomy, or the reviewer is a specialist in anatomy, and therefore wasn't finding errors in other components of the book which lay outside his specialty.

Seabirds: A Natural History

By A. Gaston. 2004. Yale University Press, [Christopher Helm], P.O. Box 209040, New Haven, Connecticut USA. 210 pages. 45 USD.

Canadians should notice the publication of this book: Since seabirds tend to be good indicators of the ocean environment, they represent how the three Canadian oceans are dealt with. The author, a leading employee

This book fills several gaps in recent ornithological literature. Ornithology textbooks of today, unlike the not-so-distant past, do not spend much space on skeletal anatomy, and when they do, the accounts are largely restricted to the chicken as the typical example. So much of the wonderful variation of avian osteology is described in Kaiser's book, that all researchers could be inspired here. However, it would take a multivolume series to fully explore this field. There are several places in this book where another diagram or two would really help the reader understand the structures being described in the text.

The second section, *What kind of bird is it?*, does as much, as any review book can, to survey the complex evolution of birds from dinosaurs, and the subsequent radiation into their more restrictive clades. Convergence is always a problem to deal with, and has been addressed. Several cladograms are presented, some based on physical characteristics, some, as is the trend, based on DNA. Additionally, there is a lot of discussion of other taxonomic research whose cladograms are not re-illustrated in this book. Given the amount of space allotted to avian evolution, the author has managed to cover the breadth of the topic quite well.

The third section of the book, *How does a bird fly?* takes us from a chapter on feathers and feathered dinosaurs (the shortest chapter in the book) through to adaptations that allow birds to exploit terrestrial and aquatic habitats (with a look at both aerial surface-foragers and diving marine birds). It presents unresolved conundrums such as why loons and grebes fly at considerable height over water, whereas murrelets and cormorants (among others), fly just over the water's surface. These conundrums help to create a book of intrigue, not just one of facts.

Birders will be fascinated with this book as it is written in a language that they will be able to appreciate; ornithologists will find enough detail to satisfy and stimulate them as well.

Literature Cited

Feduccia, Alan. 1999. *The origin and evolution of birds*. Yale University Press, P.O. Box 209040, New Haven, Connecticut. 480 pages.

RANDY LAUFF

St. Francis of Xavier University, Antigonish, Nova Scotia
B2G 2W5 Canada

with the Canadian Wildlife Service (CWS) of Environment Canada, presents us with his life's work summary of what seabirds are like, and how they fit into the world. It makes for a challenging book on a complex topic.

The text of 222 pages makes usually for a rather delightful naturalist reading, but it falls short on most relevant conservation management issues citizens are