weaknesses in our methods of learning and the gaps of knowledge pertaining to this evolutionary process. We learn that the challenge of modern paleontologists has been to test various previously formulated theories of explanation using more or less indirect methods. How Vertebrates Left the Water is intended for students learning the basics of paleontology, systematics, and evolutionary biology, not just specifically for those interested in the details of the water-to-land transition.

Historical and conceptual elements are woven throughout the book, beginning with a discussion of how evolutionary history can be reconstructed. The volume provides a foundation of classification methods, vertebrate taxonomy, and phylogenetic nomenclature, including some discussion of the PhyloCode (www.ohio.edu/phylocode). We learn about evolutionary trees and the methods to construct them. Paleontological and molecular dating is covered, and a chronology of key events along the geological time scale is presented. Our focus is then directed to the Paleozoic era, in which plants and various animal groups—including vertebrates—became terrestrially dominant. Numerous descriptive elements are also found in the book, and modes of reproduction; skeletal parts; bone histology; structural descriptions of eggs, lungs, and skin; explanations of sensory organs; and descriptions of the taxa of fossils (e.g., sarcopterygians, stegocephalians, temnospondyls, seymouriamorphs, embolomeres, gians, stegocephalians, temnospondyls, diadectomorphs) are incorporated.

Phylogenetic controversies embody an important, albeit incomplete, account of the phylogeny associated with water-to-air transitions during Earth’s early history, and it is the core of How Vertebrates Left the Water. Laurin discusses the process of transition in contexts of terrestrial adaptation and the related concept of exaptation, and we read about the evolution of locomotor systems related to girdle and limb changes, the loss of gills, terrestrial lung and skin features, changes in jaw suspension, and so on. Although an overview is given on these subjects, much research and detail has been excluded that could have given the book more balance and heft in light of its title. There is no reference, for example, to the earlier book by Gordon and Olson (1995), or to the edited volume by Mittal and colleagues (1999). The evolutionary ideas of Robert Inger, Karel Liem, Gordon Ultsch, Lauren Chapman, George Hughes, among others, could have added depth to the discussion of evolutionary process, but none are mentioned.

Other shortcomings of the book include a lack of clarity in the overall phylogeny of the various fossil clades that are discussed and the occasional ambiguity for some antecedents and in some of the conclusions. The final chapter of the book, on “Synthesis and Conclusions,” ends with a two-page discussion of modern paleontology and the “Indiana Jones” stereotype. This prose defends the usefulness of paleontology, but, to me, it seems unnecessarily defensive and somewhat anticlimactic.

Nonetheless, Laurin’s treatment of How Vertebrates Left the Water provides a generally well-written and illustrated synthesis of an interesting evolutionary topic, crafted from the perspective of a talented and qualified paleontologist. I do not hesitate to suggest that readers with an interest in evolution, paleontology, vertebrate morphology, or the fossil record will want to add this book to their bookshelf.

References cited


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WORKING TOWARD AN INTEGRATIVE UNDERSTANDING OF WORK IN LIVING SYSTEMS


In Work Meets Life: Exploring the Integrative Study of Work in Living Systems, Robert Levin and his multidisciplinary colleagues set out on a quest to develop integrative links among varied scientific perspectives on work in living systems—from cellular