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THE RISE AND FALL OF ANCIENT NEORNITHES

Paleogene Fossil Birds – 2nd Edition. Gerald Mayr, 239 p., Springer Nature Switzerland AG, Switzerland, ISBN 978-3-030-87644-9.

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CRETACEOUS MICROFOSSILS FROM COLOMBIA

Foraminifera, nannofossils, and ostracods record a gradual shallowing trend in the Umir Formation during the Maastrichtian.

EOCENE CORRELATION ADJACENT TO THE DRAKE PASSAGE

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PRODUCTIVITY IN THE PATAGONIAN MARGIN DURING MIS3

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THE RISE AND FALL OF ANCIENT NEORNITHES. Paleogene Fossil Birds – 2nd Edition. Gerald Mayr, 239 p., Springer Nature Switzerland AG, Switzerland, ISBN 978-3-030-87644-9.

The Paleogene fossil record of Neornithes is extremely dissimilar between continents, but what is most interesting about this period is the rising (and extinction) of several stem groups of birds. Regrettably, most of these records are concentrated in Europe and North America due to the lack of outcrops from that period or the comparative small number of specialists in the southern hemisphere. In 2009, Dr. Gerald Mayr published *Paleogene Fossil Birds*, a book intended to show the diversity and disparity of all the Neornithes recorded during this time-lapse, including an overview of the records, descriptions, and main features of several taxa and discussing its evolution and biogeography, together with excellent illustrations of most of the species/specimens mentioned. This book was written mainly for the paleornithologist public but also non-paleornithologists by means of including discussions and comments about the evolution of Paleogene ecosystems. All these, together with the well-known expertise of Dr. Mayr, a lead researcher on the study of stem Neornithes group and in ornithological osteology, made this first edition a must-read for anyone interested in the field of (paleo)ornithology.

One of the main strengths of that edition was the detailed description and discussion about most of the stem groups of Neornithes, which have a vast fossil record in Europe and North America. The second edition of *Paleogene Fossil Birds*, published in 2022, is an update of the mentioned first edition, going ever further with new (and even more detailed) descriptions and discussions about new findings, including the mentioned stem groups and new ones recovered outside the Holarctic region, with some intriguing new phylogenetic hypothesis. This makes the biogeographic discussions of the book particularly interesting.

The book consists of eleven chapters. It is not surprising that the first one is an introduction to the book, presenting to the reader a brief comment on the Paleogene fossil record and the intention of the book. The second chapter is also introductory, specifying the anatomical bauplan of a

bird and its terminology (mainly osteological), the phylogenetical background (including basic explanations of phylogeny and taxonomy), a summary of the Cretaceous Neornithes, and the geography and geological setting of main Paleogene fossil sites. It is interesting how Mayr summarizes the controversy of the most updated phylogenetical proposals based on molecular and morphological data and the main features of larger bird groups.

Chapters 3 to 10 are devoted to describe the large groups of birds mentioned in Chapter 2. Each chapter starts with an overview of the group, including brief descriptions of the apomorphies and main phylogenetical hypotheses and controversies. Chapter 3 describes the Palaeognathous birds, nowadays represented by the tinamous, ostriches, rheas, cassowary, emu, and the kiwi, but that also includes the extinct and well-known gigantic moas, and elephant birds among others. Chapter 4 is dedicated to the Pelagornithidae, Gastornithidae, and the Galloanseres (the group that includes land and waterfowls). Pelagornithidae, a group of affinities highly debated among ornithologists, is here profoundly described. The same happens with Gastornithidae, a group of large bulky birds that lived (mainly) in Europe and North America. Chapter 5 includes a more heterogeneous group (although more or less related to aquatic environments): Podicipediformes + Phoenicopteriformes (Mirandornithes), Gruiformes, and the diverse clade Charadriiformes. Chapter 6 includes different birds with controversial and still unresolved phylogenetic affinities (or at least with exact interrelationships controversially resolved): Columbaves (doves, pigeons, bustards, cuckoos, and touracos), Strisores (hummingbirds, swifts, frogmouths, potoos, oilbirds, nightjars, and allies) —a group particularly well represented in the Paleogene of North America and Europe—, Opisthocomiiformes (hoatzin), and other extinct fossil groups of birds. Chapter 7 is dedicated to the description of the fossil record of the Aequornithes and the Phaethontiformes, a group of birds related to the aquatic environment, with different

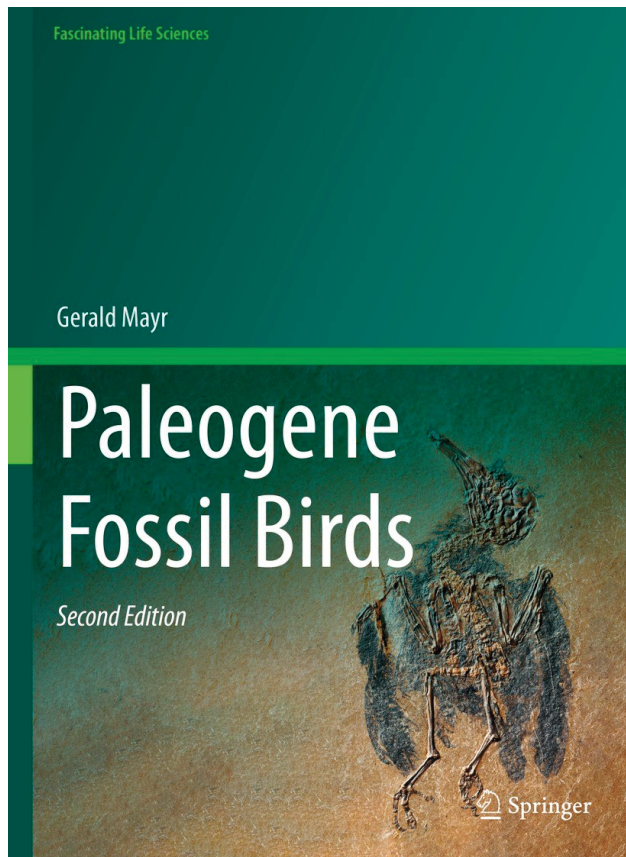


Figure 1. Cover of the reviewed book entitled *Paleogene Fossil Birds* by Gerald Mayr. Springer Nature.

adaptations to this lifestyle (and some of them extreme, as be the case of penguins –Sphenisciformes–). Chapter 8 includes the polyphyletic diurnal birds of prey (Accipitriformes, Cathartiformes, and Falconiformes, and allies) with a scarce Paleogene fossil record, and –by contrast– the Cariami-formes (the group of birds that includes the popularly known “terror birds”), with an extensive fossil record during the Paleogene. Chapter 9 describes the fossil record of the Psittaciformes, Passeriformes (the most diverse group of birds that ever existed, including ~60% of bird species), and allies. Chapter 10 deals with the Strigiformes, Coliiformes, and Cavitates (a heterogeneous group with an extensive Paleogene fossil record and constituted by Trogoniformes, Coraciiformes, and Piciformes, among others).

Finally, the book ends with chapter 11, which describes the main biogeographic dispersion pathways, and paleoecological inferences based on the Paleogene fossil record. However, this is boarded separately by hemispheres, considering that the fossil record is extremely different (James, 2005; Mayr, 2005; Tambussi & Degrangé, 2013). Considering the rising of novel dispersal hypotheses and ecological adaptations observed during the evolution of birds (certified by the vast fossil record of different groups) during the Paleogene, this chapter seems to be the most interesting and transversal among disciplines (besides the particular interest in one systematic group or another).

In conclusion, Dr. Mayr once again demonstrates why he is a lead researcher in the evolution of basal Neornithes. The book is beautifully illustrated, and the descriptions are very detailed. Several groups are exclusive of certain small regions or have a fragmentary fossil record, making them not very well known. Therefore, it is difficult to find condensed information about them outside of this book. Dr. Gerald Mayr never intended to write a fossil bird catalog (neither in 2022 nor in 2009). This makes the reading fluent, dynamic, and easy for specialists in the field of (paleo) ornithology, and paleontologists in general. Dr. Gerald Mayr did it again: This is a must-read book.

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