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book review

Avian history is written by the winners

Avian survivors: The history and biogeography of Palearctic birds, by Clive Finlayson, 2011, T & AD Poyser Ltd., 304 pp. £50 (Hardback) ISBN: 9780713688658; <http://www.acblack.com/naturalhistory/>

This is a difficult book to review fairly, because it is not a book to read through, nor is its intention easily discerned. It is a profound and deeply detailed compilation, assessing the climatic, historical and biogeographical attributes of the bird fauna of the Western Palearctic. Its intention is to understand how this particular constellation of species survived through the climatic vicissitudes of the Tertiary Period, and especially the last 2 million years of the Pleistocene climatic fluctuations, to be combined as the extant fauna.

Finlayson was inspired by the remarkably diverse faunas that appear in the caves of Gibraltar, at the extreme southern tip of the Western Palearctic. At different times these included northern species such as Great Auk and Velvet Scoter, at others southern species such as Lammergeier and Crag Martin. Those that still occur in the Palearctic are the survivors of his title. He starts with a short outline of the climatic, geographical and ecological changes that affected the region during the Tertiary, as Africa and India shifted north to collide with Europe and Asia, so closing the Mediterranean, and causing the uplift of the mountain ranges across central Europe and Asia that changed the climate, especially the strength and direction of rain-bearing winds. Grasses evolved in this period, and grasslands, replacing tropical forests, became more widespread. His analysis of the times of origin of bird genera that, at present, include migratory species, especially Trans-Saharan migrants, suggests that many of them evolved in the Miocene, as the grasslands appeared. Popular, perhaps superficial, opinion has assumed that the glacial-interglacial cycles of the Pleistocene prompted the evolution of the migratory habit, but this analysis strongly suggests that it was already well established.

The majority of the book is a detailed examination of each family, genus and species

that is currently represented in the Palearctic. It assesses their climatic limits, habitat requirements and likely history. Much modern work on genetic phylogeny is used to assess the zoogeographic origins of such taxa, when they migrated into the Palearctic, and how their climatic requirements have persisted, along with the taxa themselves. Each is assigned to its climatic and latitudinal tolerance ranges, and to its migratory group (sedentary, partial migrant, Trans-Saharan migrant). For instance, Finlayson interprets the history of the Corvidae as probably evolving in Australia, and migrating into the tropical forests of Southeast Asia, where a great diversity of basal genera still occur; but one, the Choughs (*Pyrrhocorax*) migrated out along the great mountain chain right across Asia and Europe in the Miocene, as mountain uplift created their drier upland habitat. However, most corvids remained essentially forest species, and migrated west along the forest belts south (mostly deciduous) or north (mostly coniferous) of the mountains. Corvids reside mostly in more humid climatic zones, and few show much migratory behaviour. Fossil corvids are represented in Europe by Middle Miocene times; two modern genera are present by the Early Pliocene (*Pyrrhocorax*, *Pica*, two more by Middle Pliocene (*Garrulus*, *Nucifraga*) and all by Early Pleistocene.

Sometimes the detailed evidence on which such histories are based is clearly indicated. The fossil record is largely quoting the compilation by Mlíkovský (2002), and the phylogenetic references are well cited. However, much of the story is informed speculation, of probable histories and probable spreads, based upon known climatic and geographical changes, and the known broad ecological requirements of the taxa. Given the number of taxa involved, this amounts to quite a lot of speculation accumulated over the book as a whole. This is not to suggest that it is wrong, nor does it deny its value. A lot of diverse information

has been interwoven to compile these stories. The value of the book lies in the last three chapters, which analyse the current Palearctic fauna as a whole in terms of its zoogeographic origins and history, climatic tolerances and migratory tendencies. This provides some fascinating insights. For instance, while much of the Palearctic fauna originated in Southeast Asia, a substantial proportion came from North America (and some Palearctic lineages reciprocated), but very few came from neighbouring sub-Saharan Africa. The tables listing the species and groups belonging to each faunal component are fascinating. How few are the lineages that have worldwide ranges, probably reflecting their origin in the warm, humid, Eocene World (Table 19.1 lists only 33 genera). Similarly, the dominance of the Palearctic bird fauna by omnivorous species contrasts with the few specialist herbivores and large-prey predators; Finlayson makes the interesting suggestion that the latter niches might be dominated instead by mammals. Many omnivorous species show wide climatic tolerances, and are often sedentary, while the insectivores, another diverse group, manage to remain so because they are mostly migratory; many of them show restricted bioclimatic tolerances. These alternative major strategies, migration or bioclimatic tolerance, are what Finlayson divines as the major reasons for the current diversity of the avifauna.

This is not easy reading for the average ornithologist, but is a stimulating compilation for zoologists wanting an evolutionary perspective on the fauna. They will find much to think about, and some details to contest. Finlayson blithely accepts the phylogenetic argument that many bird lineages originated in the late Cretaceous; this ignores the paucity of palaeontological support, and I suspect instead that the molecular clock ran fast for birds in the early Palaeocene, as it surely did also for mammals. In practice, this assumption makes little difference to his overall analysis, and does not detract from its value. As well as his inspiration from the ancient fauna of Gibraltar, he acknowledges the importance of Moreau's influential and magisterial analysis, now 40 years old, in *The Palearctic-African Migration Systems* (1972). Finlayson has indeed compiled a worthy sequel.

References

- Mlíkovský, J. (2002). *Cenozoic Birds of the World*. Ninox Press, Prague.
- Moreau, R. E. (1972). *The Palearctic-African Migration Systems*. Academic Press, London.

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