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## **Feathered competitors: what birds can teach ecologists about species interactions.**

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### **Book Review**

Interspecific Competition in Birds. André A. Dhondt.

Oxford University Press, Oxford. 27 October 2011. £32.50 pbk. pp 296. ISBN 978-0-19-958902-9.

Although competition is one of the main interactions to occur interspecifically – along with predation, herbivory, parasitism and mutualism – it remains contentious as regards both its frequency and its role in ecological systems. Somewhat surprisingly, therefore, few books have been devoted to the topic with the major exception of Paul Keddy's *Competition* [1], which won awards from the Canadian Botanical Association and New York Botanical Garden but received mixed academic reviews.

Dhondt's new offering, *Interspecific Competition in Birds*, is the second volume of the recently-launched Oxford Avian Biology series, following hard upon the excellent *Avian Invasions* [2]. Each volume aims to provide an in-depth review of a theoretical concept in relation to birds, whilst also highlighting relevance to key themes in ecology and evolution more generally. The topic of interspecific competition (IC) has the potential to fit this scope perfectly, and, with Dhondt's skilful handling, this potential is largely realised.

The work is more monograph than textbook, but, as with Ian Newton's recent works [e.g. 3], it tempers the depth demanded a research audience with an accessible style that means its usefulness to students is undiminished. Unusually, the book is written entirely in the first person and this, together with a fairly relaxed yet precise prose style, means that reading it is almost like listening to a series of clear and well prepared lectures.

In terms of topics, many could have been predicted. The book follows a logical path, considering space, food, and nest sites as limiting resources, before considering the effect of competition on population dynamics – the oft-cited concept of density dependence. Less predictable, but extremely useful, is the comprehensive overview of field experiments undertaken to investigate IC in birds. Arising from the cautionary tale of inferring causation from correlation, this covers experiments

manipulating both resources and abundance of competitors to provide a solid foundation on which to base conclusions about the role of IC in natural systems. Less effective is Dhondt's consideration of his own work on competition in blue (*Cyanistes caeruleus*) and great tits (*Parus major*). An overview of IC in a given system could have been an illuminating case study. However, this work is comparatively poorly integrated and confused by a sudden dual focus on intraspecific competition, while numerous statistics (rather than the summary tables used so well elsewhere) make it feel rather heavy-going. Make no mistake, the material is interesting, but it feels somewhat of a hybrid between a theme of a broader book and a review article and is perhaps a little disjointed as a result.

Two aspects of this book are worthy of special mention; the introduction and the penultimate chapter on evolutionary effects of IC. Often, introductory material, although necessary for scene-setting, has little to offer in the way of synthesis or new insight. Here, Dhondt breaks the mould by providing an interesting historical contextualisation of IC research (mainly, although not exclusively, in birds) with reference to Gause's Law of Competitive Exclusion and the "Ghost of Competition Past" concept [4], as well as work by David Lack and Huib Kluijver. The penultimate chapter returns to these central tenets and considers them afresh in the light of the intervening material, concluding that "coexistence of species is ... the result of both currently ongoing interspecific competition, and of interspecific competition in the past". These discussions are some of the most interesting in the book, but so much effort has gone into considering evolutionary importance – weighing into the old debates of Lack, MacArthur, Diamond and Simberloff – that key questions about why there is so much complexity in competitive interactions in different situations (presence versus absence; differing directionality and strength) are somewhat overlooked.

Pleasingly, this book not only synthesises knowledge, it critiques and, where necessary, challenges it. Indeed, Dhondt seems to revel in the complexity of avian competitive interactions; for example, there is a balanced consideration of heterospecific attraction – the direct opposite of competition. He does not shy away from the uncertainties inherent in studying ecological interactions, but instead discusses that complexity clearly and succinctly. In this way, the book stimulates independent thought and morphs from being merely a competent capstone of current knowledge into a more valuable springboard for future discovery.

In summary, this would be an excellent addition to the bookshelf of anyone studying the Aves. Ecologists with other specialisms might glance at the front cover, note the avian bias, and pass on. This would be to their detriment, for, as the preface correctly maintains, the work has broad relevance; seeing it "just" as an ornithology resource would be to do it a disservice.

## References

- [1] Keddy, P.A. (2001) *Competition*. (2nd edition) Kluwer Academic Publishers, Dordrecht.
- [2] Blackburn, T.M. et al. (2009) *Avian Invasions: The Ecology and Evolution of Exotic Birds*. Oxford University Press, Oxford.
- [3] Newton, I. (2010) *Bird Migration*. Collins, UK.
- [4] Connell, J.H. (1980) Diversity and coevolution of competitors, or the Ghost of Competition Past. *Oikos* 35: 131-138.