

**Insect and Bird Interactions.** 2004. *edited by* Helmut van Emden and Miriam Rothschild. Intercept Publishers, Ltd., Andover, UK. ISBN 1-898298-92-0.70£ or 112 Euros.

I wanted to be an ornithologist by the age of four. Bird-watching controlled my life until 16 years later when a peripheral interest in insects was rekindled, leading to a 30-year career studying bees and butterflies. I enthusiastically agreed to review “Insect and Bird Interactions” (IBI) which the book’s cover informs us “...is the first of its kind to explore the diversity of interactions between insects and birds.” Given my personal experiences, I had a set of topics I hoped would be explored (including butterflies and bees!). Having birded several spring migration hot-spots, like Point Pelee, I was particularly interested in how hungry birds affect the phenology and abundance of the insects they encounter during the 3-4 weeks of migration. Although I was somewhat disappointed because IBI failed to cover this and most other topics on my mind, as a consequence I learned about many other topics.

Part 1 of the book discusses “population management issues.” The first chapter (as well as Chapter 16) demonstrates that in simple environments, we can obtain insights and model populations with a high degree of certainty. However, when that focus is shifted to more complex communities of birds and their prey (Chapter 6), we see that for most birds the real world is too messy to allow modeling in all but the most intensively studied systems.

Chapters 2-4 discuss the depressing effects of modern agriculture on natural biodiversity. The difficulty of precisely determining the insects that comprise the foods of any bird species in a community, coupled with the contributing factors of variable farming techniques and applications of pesticides by growers, make it impossible to directly link changes in bird populations with specific agricultural activities. Nevertheless, numbers of many British birds are declining in part due to new farming practices, especially the loss of buffer zones around fields and the removal of weeds with herbicides. The best data are derived from detailed studies of the Grey Partridge (Chapters 3 & 7). I enjoyed the detailed account of the cough, for which a strong relationship between livestock grazing patterns and crane fly ecology seems to determine the quality of foraging conditions and consequently nesting success for the birds. This is an excellent example of research that provides humans with information we can use to modify farming activities to improve conditions for birds.

Chapters 7-9 concern the effects of insecticides on bird populations. The overall tone is that insecticides are generally bad for birds—a fairly safe assumption that nevertheless demands empirical support. Unfortunately, the authors are forced to rely extensively on logic and “soft” data because the complexity of the systems limits our ability to conduct “hard” tests; consequently, their arguments will fail to convince the skeptics. From an historical analysis, Colin Walker (Chap. 9) suggests that the use of cyclodiene insecticides, not DDT/DDE, were probably responsible for the egg-shell thinning that led to declines of Sparrow hawks and Peregrines in the UK. Unfortunately, American data are only briefly referred to, leaving me uninformed about how the UK experience relates to the generally accepted story that DDT and its metabolite DDE caused declines in raptors in North America.

Part 3 has 8 chapters concerning foraging behaviour of birds. I was impressed with the complex colour vision of birds that includes perception of UV-wavelengths (Chaps. 10 & 11). In addition, the story that I learned long ago, that birds have a poor sense of smell, is shaken by experiments in which birds adjust their feeding in response to various odours (Chap. 12-15).

These chapters force us to rethink warning colouration and mimicry in insects in terms of the visual and olfactory stimuli that specific avian predators can perceive. Also, we cannot assume that one bird perceives an insect in the same way another does, further complicating the study of mimicry. Detailed analysis of the ant prey of wrynecks (Chap. 16) clarifies why this species can survive in both natural and highly managed ecosystems, but fails to provide guidance for us to conserve this uncommon and declining species because “the impact of modern agricultural practices on ant communities is not known.”

The last three chapters concern the ectofauna of birds. Chapter 18 reviews the various defenses birds have against ectoparasites. I was disappointed that the authors chose not to discuss the evidence relating to the well-known Hamilton and Zuk handicap principle. On the other hand, the extent to which bill morphology represents a compromise between preening and foraging abilities was particularly interesting. Chapter 19 provides a strong argument that young Common Cuckoos acquire their lice from conspecifics on the wintering grounds. However, it is poor science to use data from obligate brood parasites (cuckoos) to question the vertical transmission of lice from non-parasitic parents to their young.

As is true of many edited volumes that emerge from symposia, the various styles and variable depths of the book's chapters fail to provide a comprehensive overview of the subject. Several chapters could have been replaced. Chapter 1 (shorebird ecology) and Chapter 10 (the avian retina) make no mention of insects. (The relevant information from Chap. 10 is repeated and placed in entomological context in Chap. 11). Chapter 20 was written for phylogenetic specialists and the primary message will escape most readers. Some other chapters are so specific (i.e., individual experiments) that the uninformed reader will have difficulty placing them into context. Many topics and taxa (e.g., bee-eaters, honey-guides) were neglected. Despite these shortcomings, I learned many interesting things from IBI, as highlighted above. It is discouraging that for most bird species, complex diets coupled with species-specific olfactory and visual abilities, temporal changes in insect communities, and complex interactions with numerous other birds and insects, make it impossible to fully understand their effects on individual insect species. With the added unknowns of global warming and a paucity of ornithologists who understand insects (and vice versa), it becomes apparent that this topic will remain blurred for years to come.

Although too complicated for most birders, this book will appeal to both insect and bird behaviourists and ecologists. The early chapters should also be of interest to people interested in the effects of modern agricultural practices on natural communities. However, I am unsure how many of these individuals will find enough of interest to be satisfied. Academic institutions should purchase IBI as a reference work.

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