The Condor 101:455–459

BOOK REVIEWS

Social Influences on Vocal Development.—Charles T. Snowdon and Martine Hausberger, eds. 1997. Cambridge University Press, Cambridge, U.K. ix + 351 pp. ISBN 0521 49526 1. $95.00 (cloth).

At least in certain aspects, this book is a referee's dream: not only do the editors provide short summaries in their introduction of the 16 articles making up this volume, they also inform the reader about the main general conclusions that can be drawn from those articles. According to Snowdon and Hausberger, there are five central themes that are treated in almost all contributions. The first and main theme is the claim that vocal learning has more aspects than learning to produce sounds. It is also necessary to learn how to use and comprehend vocalizations. This is indeed an important point that has in the past been neglected to a certain degree. The articles in this book show that there are examples for the importance of learning the use of vocalizations from birds over dolphins and nonhuman primates to humans.

The second theme emerging from the book chapters is the influence of social input on the stages of development. The main point behind that, in my opinion, is the everlasting debate of the song-learning people concerning sensitive periods and variability of their limits. The article of Doug Nelson clearly points to one possible explanation of the debate, the fact that many researchers of bird song still have not fully understood (or accepted) the idea of a two stage process in song learning. Unfortunately, it seems as if the editors and also the other authors dealing with that issue did not really understand what Nelson suggests. At least for the editors, this can be concluded from their statement (p. 4) "Although Nelson argues that this selective process may account for reports of delayed learning in closed-end learners, several authors in this volume defend the possibility of later learning under social influences." This shows that the editors do no accept the idea that "action based learning" with a selection process is also learning. The outcome of acquisition learning during the sensitive period and action based learning thereafter are not necessarily different; this is probably the reason why it is so difficult to swallow the idea that song learning (like other imprinting-like learning processes) occurs in two stages.

The editors continue their evaluation of the book chapters by stating the importance of investigations of the nature of social influences on song learning. There may be different levels of social influences, reaching from attention and multimodal stimulation to reinforcement or real interaction, where the learner must "be viewed as an actor . . . and not as a passive receiver. . . . ."

Finally, the editors point to the idea that the ability of vocal learning may be an indicator of social behavior. They believe that vocal plasticity may be correlated, for example, with high mobility of a given species. I do not know whether enough experimental backing could be found for this idea, but it is an interesting one.

Why read the rest of the book if the main themes are already discussed in the introduction? I believe it is worth it, not only to check the statements of the editors. All the articles are fine reviews of a given field, written by experts. Doug Nelson provides a very good account of the state of the art in song learning theory, and as I expressed above, I fully agree with his claim that the two stage nature of song learning is still not fully understood or accepted by other researchers of the field.

Luis Baptista and Sandra Gaunt provide a very competent review on social interaction and vocal development in birds. As ever, there is a wealth of findings from the lab and from the field included in their review. They also discuss Nelson's theses. Although the general idea which I get from this discussion is that Baptista and Gaunt do not really accept Nelson's view, I see some sort of convergence.

West, King, and Freeberg provide an article on "building a social agenda for the study of bird song," which is a little bit wordy but reviews nicely the published and some unpublished findings of the authors. Their main point is that not only do vocalizations have to be learned, but also their proper use. Payne and Payne review their work on Indigo Buntings (*Passerine cyanea*) and village indigo-birds (*Vidua chalybeata*). They underline that "social interaction of mature birds is a usual condition of song learning in the field," and that song learning usually takes place during the first breeding season and on the breeding area.

The article of Richard Zann reviews his excellent field studies. He successfully reconciles data from the lab with those from the field, and ends with a schematic representation of song learning options in Zebra Finches, which really convinces me and should also satisfy both Nelson, and Baptista and Gaunt. In the next chapter on avian research, Eleanor Brown and Susan Farabaugh tell the interesting and not so well known story of song sharing in Australian Magpies (*Gymnorhina tibicen*), American Crows (*Corvus brachyrhynchos*), and the Budgerigar (*Melopsittacus undulatus*). They state that in those highly social species the ability to learn vocalizations continues throughout life because the associations with other group members change continually, and the vocalizations have to be adapted to the changed social conditions. This is an attractive idea, and some of the other chapters in the book indicate that the same mechanisms may work, to a lesser degree, in "less social" birds like Zebra Finches. Martine Hausberger reviews her research on song learning in starlings. Besides other points, she stresses that the song repertoire of starlings contains elements which show the personal identity of the starlings, and others which belong to the group identity. Finally, Irene Pepperberg provides a link between avian and primate research by discussing how far the "social modeling theory" can be applied to her own work and to that of colleagues working with human primates.

Although *The Condor* is mainly an ornithologist's journal, the reader should not skip the remaining arti-

cles which provide very interesting "comparative" data from other species. McCowan and Reiss report about a very promising and interesting attempt to study vocal learning in bottlenose dolphins, Tyack and Sayigh provide an overview of vocal learning studies in cetaceans, with the main emphasis on the so called "signature whistle." Snowdon, Elowson and Rousch in their report on "Social influences on vocal development in New World Primates" conclude that the disagreements which still exist between the research on vocal development in birds and primates is mainly due to the fact that it was directed towards song production rather than ontogeny of usage. Seyfarth and Cheney underscore the importance of examining both by providing excellent examples in their review of vocal development in nonhuman primates, whereas Locke and Snow bridge the gap between vocal learning in human and nonhuman primates. Goldin-Meadow provides a very interesting article on "The resilience of language in humans" which describes her very interesting studies on gesture systems of deaf children and tries to put it into a framework of ethological definitions.

The two remaining articles describe psychological observations concerning the role of interaction in the development of communication and language. As the other articles before, the importance of language usage learning is stressed here again.

To summarize, I believe that this book is an important one because it has a matter of concern, which has as yet not been adequately treated. Moreover, it is a useful collection of reviews which is a must for everyone working in the field. University and college libraries should have it because I believe it is an important milestone towards a unified theory of vocal learning, even if at this stage it seems still quite a distance away.—HANS-JOACHIM BISCHOF, Universitat Bielefeld, Lehrstuhl fur Verhaltensforschung, Morgenbreede 45, 33615 Bielefeld, Germany, e-mail: bischof@post.uni-bielefeld.de

Host-Parasite Evolution: General Principles and Avian Models.—Edited by Dale H. Clayton and Janice Moore. 1997. Oxford University Press, Oxford. xiii + 473 pp. ISBN 0-19-854893-1 (cloth), 0-19-854892-3 (paper). $105.00 (cloth), $45.00 (paper).

Ornithologists now realize that parasites affect virtually every aspect of bird biology. Parasitism may often have greater consequences than predation or competition, and we have begun to document many examples of host-parasite coevolution from cellular to population levels. This volume, in some respects a successor to Loye and Zuk's (1991) similar book on avian parasitism (*Bird-parasite interactions: ecology, evolution and behaviour,* Oxford Univ. Press, Oxford), summarizes much of the current work on bird parasites and pathogens and covers more ground than Loye and Zuk. Clayton and Moore's collection of papers will serve as the definitive reference for ornithologists interested in parasites.

One of the few scientific legacies of the 1994 International Ornithological Congress, this book had its origins at a symposium on host-parasite evolution at the Vienna conference. The book has considerably more to it than the symposium, however, with 20 chapters from 27 authors. Those cover an enormous range of topics from avian immune responses at the cellular level to community-wide patterns of parasitism. In between, the reader is treated to thorough reviews of the role of parasites in sexual selection, their effect on life histories and population ecology, and phylogenetic analyses of host-parasite coevolution. The book's title is misleading in that only a few chapters specifically address coevolution between hosts and parasites or natural selection on hosts caused by parasites. Over 40% of the book is devoted to surveys of parasite faunas on birds, natural history of parasites and pathogens, or methods of studying avian parasites. Those chapters may turn out to be the most useful in the long term, as they will serve as an excellent reference for virtually anyone interested in bird parasites. The more theoretical chapters are likely to become rather quickly outdated as research on parasitism of birds proliferates. The emphasis throughout is on avian micro- and macroparasites, although there is one interesting chapter by Payne—seemingly out of place in this book—on brood parasitism in birds. There is not an exclusive focus on birds, despite the title's implication. For example, Simberloff and Moore's chapter on community ecology of parasites and their hosts has relatively little mention of birds and uses numerous nonavian examples.

Clayton and Moore's book suffers from the usual problems that afflict edited volumes, principally wide variance in chapter quality and some redundancy among chapters. The latter is less pronounced here than in other edited books, reflecting fine editing by Clayton and Moore. Some chapters are excellent syntheses of current thought, while a few are rather forgettable rehashings of material of mostly the author(s) that had been published elsewhere. One chapter I found particularly interesting was Hillgarth and Wingfield's review of the endocrine basis of parasite-mediated mate choice, focusing on the idea that males may face a tradeoff between high levels of immunocompetence or high levels of testosterone. Males may need high testosterone to produce the secondary sexual characters important in mate choice, but production of testosterone appears to suppress the immune system. The interaction among testosterone, immune function, and mate choice is complex, and Hillgarth and Wingfield do a nice job of outlining research needs in that area. Refreshingly, the well worn Hamilton and Zuk handicap hypothesis for mate choice is not prominent in the book, being only briefly reviewed in one chapter (and cited in only three chapters), although one could perhaps argue that this is an unfortunate omission in a volume of this all-inclusive scope. Other chapters of special note included Møller's review of how parasites affect host life history, Nuttall's primer on viruses, bacteria, and fungi of birds, and Clayton and Walther's guide to collecting arthropod parasites from birds. Møller demonstrates the profound effect of parasitism at virtually all stages of a host's life history, and one comes away from his review ready to reject any manuscript or grant proposal on avian population biology that does not account for effects of parasites or pathogens. Nuttall provides an accessible entry into the bizarre world of avian microparasites which I, as

someone just beginning studies of avian viruses, found particularly useful. The appendix chapter by Clayton and Walther, describing ways that different kinds of ectoparasites may be collected from birds, may turn out to be the most widely read chapter in the book. It is a must for anyone contemplating field studies of avian parasitism.

Authors of most chapters do a good job of identifying major questions that should guide studies of avian parasitism into the next century. Those are well summarized in a concluding chapter by the editors. The book should prove to be a valuable resource to graduate students searching for thesis topics. It is obvious from the papers in this volume that one exciting and important frontier is the study of the relationship between parasitism and immune function in birds. The principal defense of most hosts against parasitism is immunological, but investing in an immune system requires limited resources that are also needed for growth, survival, and reproduction. The widespread variation in immune function among host individuals suggests that hosts balance this tradeoff in different ways, but we understand relatively little about how animals make those choices and their consequences. When we observe an animal in the field with a heightened immune response, is that individual of particularly good quality or has it been sick and exposed to many parasites? What are the total life-history consequences of high immunocompetence? Do immunocompetent birds live longer but reproduce less because their endocrine systems are suppressed? This is an exciting time for those of us interested in parasitism and its effect on natural populations.

The editors state in their preface that one intent of this book is to break down barriers between classical parasitologists and evolutionary biologists. They rightly point out that the former have been guilty of the view that only an expert on a particular group of parasites can do meaningful work on that group, and the latter have been guilty of a condescension toward those who focus on descriptive studies of taxa. A joining of forces would yield more rapid progress. This volume has at least breached the barrier, because it has drawn together parasitologists and evolutionary biologists into the same, remarkably well integrated book. Clayton and Moore have produced an interesting, attractive volume that is the finest edited book I have seen in quite some time.—CHARLES R. BROWN, Department of Biological Sciences, University of Tulsa, Tulsa, OK 74104-3189, e-mail: charles-brown@utulsa.edu

A Guide to the Birds of the West Indies.—Herbert A. Raffaele, James W. Wiley, Orlando H. Garrido, Allan R. Keith, and Janis I. Raffaele. 1998. Princeton University Press, Princeton, NJ. 512 pp., 86 color plates. ISBN 0-691-08736-9. $49.50 (cloth).

Bond. James Bond.

For much of the civilized world, that name brings up immediate images of the virile spy with a license to kill. For a subset of ornithologists with interests in the West Indies, the Bond name for years was associated with the only field guide to birds of that region, along with a lifetime's studies on West Indies birds.

But time marches on. Just as the Bond movies lost much of their charm after Sean Connery stopped playing that role, retirement and death of the real James Bond in 1989 meant that his *Guide to the Birds of the West Indies* was becoming more and more out of date. In addition, the burgeoning market in avian field guides set modern standards of quality much higher than found in the Bond book, which first appeared in 1936.

Enter Raffaele. Herbert Raffaele. Not as handsome as Sean Connery, perhaps (although I have always admired Herb's choice of suits), but he and his colleagues have filled the niche left by the loss of James Bond with the extremely high quality *A Guide to the Birds of the West Indies*. Listed as authors following Raffaele are James W. Wiley, Orlando H. Garrido, Allan R. Keith, and Janis I. Raffaele. Tracy D. Pedersen and Kristin Williams are listed as primary illustrators, with additional art by five others.

This large but not unwieldy guide covers 564 species known from the West Indies, including migrants, introduced species, and vagrants. That coverage is achieved with 86 color plates, with each plate illustrating up to 18 species, but 12 reserved for beautiful representations of single island endemics, often with habitat or nesting information incorporated into the plate. Another eight plates group island endemics together.

The 235 pages of species accounts have sections on local names, identification, voice, status and range, and habitat for each species, plus a "Comments" section that provides other observations helpful for identification. Each species has a map of the West Indies showing its range. A 43-page locality checklist summarizes distribution of each species and provides a status category for each island on which a species occurs. That list makes it easy for someone planning a trip to just one or two islands to develop a list of possibilities without going through the whole guide.

As Raffaele is an employee of the U.S. Fish and Wildlife Service whose job involves international conservation efforts, it is not surprising that more information is provided on that topic than in most field guides. The 15-page section on conservation includes statements from local representatives of 19 islands or island-groups about conservation problems specific to their homelands. The acknowledgements section is a veritable "Who's Who" in Caribbean ornithology, noting those who contributed in meaningful ways to the book.

It also is worth noting that because Herbert Raffaele is a federal employee, profits from sale of the book go to the Caribbean Society for Ornithology, the National Fish and Wildlife Foundation, and the Fish and Wildlife Service's Winged Ambassadors migrant bird program. Raffaele also is making copies of color plates available to others in the Caribbean, thus greatly reducing the chief hurdle for those wanting to do island-specific field guides.

With so many West Indies bird experts providing so much energy and passion to this guide, it is not surprising that its quality is very high. Most of my criticisms fit into the "picky" category. The plates are generally excellent, but, in my mind, those illustrators join the long list of artists who have failed to capture the

essence of members of the West Indian Tody family. Having watched todies for hours, I know that they just don't look like the ones pictured. On the other hand, once one sees a tody, the last thing one needs to do is check a field guide!

Each species has a map, which seems like a nice idea, but which is not always that useful. When maps show the whole West Indies region, the detail is quite small (and hard for me to read even with my new bifocals). A circle around St. Lucia is not only hard to find, but to truly appreciate the map, one has to be able to remember names of the islands as one goes up the chain of Lesser Antilles. Here, one could just have stated "St. Lucia" under the range section. The same is true for species found throughout the West Indies, particularly those associated with marine habitats. Fewer maps would have saved some space with little loss of information.

With avian taxonomy in such a state of flux, the authors made some decisions that are undoubtedly bound to irritate some concerned with the "proper" taxonomy, including some differences with the recently released AOU Check-list. For example, the authors split Lesser Antillean Pewee (*Contopus latirostris*) into three species and used a different name than the AOU for the pewee species occurring in Cuba and the Bahamas. Whereas the AOU stuck with a single species of Stripe-headed Tanager (*Spindalis zena*), this book recognizes four species of that bird, following recently published work showing major differences among those groups. At the family level, though, the West Indies guide kept all families constituting the Emberizidae together, even though the AOU went back to using Parulidae, Icteridae, etc.

All of those complaints are very minor ones. Raffaele and his colleagues have made a state-of-the-art field guide which should encourage further work in that region. Those of us with copies of Bond should retire them to our bookshelves for reference or for the memories they contain. Raffaele is the book of the future in the West Indies, although I know there will always be occasions for me to grab my ragged copy of Bond, James Bond.—FAABORG, JOHN FAABORG, Division of Biological Sciences, 110 Tucker Hall, University of Missouri, Columbia, MO 65211, e-mail: faaborg@biosci.mbp.missouri.edu

The Hornbills.—Alan Kemp. Illustrated by Martin Woodcock. 1995. Oxford University Press, Oxford, U.K. xvi + 302 pp., 14 color plates, numerous drawings and range maps, 13 tables and 4 figures. ISBN 0-19-857729-X. $65.00 (cloth).

This is a comprehensive treatise covering all 54 species of a fascinating group of Old World birds (Order Bucerotiformes) written in a style designed for a wide audience. With large casques on their beaks and peculiar breeding habits (nesting female seals herself in a natural tree cavity), hornbills are unique among birds. But some other unique attributes are less known: 2-lobed not 3-lobed kidneys; lack of under-wing coverts causing wings to leak air giving large species a whooshing noise in flight; surface (subcutaneous) air-sacs in chicks, and unique skeletal neck support. Still it is a very diverse group in habitat selection (savanna to deep forest), size differences (dove- to turkey-sized), and social organization (monogamous territorial to cooperative breeders). Kemp has done a commendable job covering this peculiar yet varied group in one compact volume.

Having long been a student of hornbills, Kemp is eminently qualified for this compendium, and the overall good quality of the book reflects his competence. In the first few chapters he provides an overview of the order covering various aspects of their biology including breeding behavior, feeding ecology, taxonomic affinities, zoogeography, and conservation. The second and main part of the book comprises concise accounts, with range maps, of all that is known for the 54 species. With over 600 literature citations, the book furnishes an extensive unprecedented coverage of the literature up to 1993, including little known and inaccessible sources such as conference proceedings, symposia, and the like, plus a vast, mostly taxonomic, literature in German. The small but excellent glossary at the end of the book will assist the lay reader.

Martin Woodcock's paintings, showing the birds in various plumages (sex, age, subspecies) at rest and in flight seen from above have splendid life-like qualities. Some of the forest hornbills also should have been shown in flight from below. The excellent color illustrations, and the fine drawings throughout the text, makes it a delight to the casual user and a vital source of information to one keen on field identifications. The attention given to juvenile and subadult plumages is particularly welcome.

Kemp makes clever use of computational skills to derive a variety of information on the design of hornbills (Chapter 2). Particularly impressive is the way he predicted body masses of little known species using regression between wing length and known masses (Fig. 2.1). However, the figure caption erroneously has an initial $\log_{10}$ on the independent side of the equation—this should be deleted; also the dot after 2.917 should be raised to indicate multiplication and not decimal point as it now appears. Table 2.3 presents previously unknown information on estimates of basal metabolic rate, flight metabolism, wingloading, and aspect ratio for all species of hornbills.

Kemp's values in Table 2.4 (p.17) differed slightly from our selected recalculations, which could be due to differences in rounding off for cube root of body weights, but one value (bill length proportion in *B. bicornis*) is nearly 2 points off. Also, these figures indicate *proportions* and thus should be dimensionless. Yet, they are presented erroneously as units (mm, mm^3, etc). Part of the next table (Table 2.5.) is confusing. With its "+" signs, it seems to indicate that casque difference occurs between sexes in all species of hornbills, but the color plates show no difference in some species, and indeed on p. 22 he says some males do not have larger casques than females. An explanation of the "+" symbols might have clarified this problem.

Kemp's expertise in conservation is evident in the Conservation chapter, wherein he emphasizes that 80% of hornbill species in tropical moist evergreen forest could be threatened by habitat loss, and that nest site availability, declining due to depletion of large trees, is possibly the most critical factor for hornbill survival.

He advocates installing artificial nest cavities, which seldom has been tried, and presents a basic design. Kemp stresses education and overall forest management rather than establishing reserves because reserves are characteristically too small to support populations of larger hornbills. Kemp's suggestion of harvesting juveniles and using them for captive breeding to build a stock for sale to conservation projects seems replete with impracticabilities and potentially insurmountable legal and bureaucratic hassles. He neglects to mention the importance of ecotourism in hornbill conservation.

The hornbill fossil record, being poor, obscures the evolutionary history of these birds. Kemp uses cladistics incorporating various hornbill features to produce a tree-diagram (Fig. 6.1) that shows ground hornbills are a separate Family (Bucorvidae) from the rest (Family Bucerotidae). He misinterprets a portion of the tree and says that some *Ocyceros* hornbills (Indomalayan region) are "closely allied" (p. 65) to the African *Tockus,* whereas the tree shows *Ocyceros* is connected to a different branch not including *Tockus.* He also contends that evidence from Mallophaga (chewing-lice) distributions on hornbill species (Fig 6.2) supports the cladistics, but this is not apparent. Perhaps more explanation in the text would have helped. The minimal DNA hybridization work produced a tree that is consistent with cladistic results.

Kemp emphasizes the importance of ebb and flow of forest and savanna, and the rise and fall of ocean levels connecting land masses, as driving forces in hornbill distributions in Africa and Southeast Asia, respectively. But he does not mention the disjunct distribution of the Great Pied Hornbill (*Buceros bicornis*) on the Indian subcontinent (Himalayas and peninsular India) explained by the formerly higher Satpura Mountains connecting the biota of the two areas (S. Hora, 1950, *Current Science* 19:364–370). Taxonomic notes are provided for some species, but not for Oriental Pied Hornbill *Anthracoceros albirostris,* thus missing the confusion over this name and *A. malabaricus* for the species (S. Ali and S. D. Ripley, *Handbook of the birds of India and Pakistan,* Oxford Univ. Press, 1983).

There are some errors, inconsistencies, or drawbacks: none of the range maps are titled often forcing page flipping; the opening hornbill diagram mislabels the throat as breast and the crus as thigh; the diagram also omits eyelashes—characteristic of all but the two Bucorvids; no hornbills are shown in eastern peninsular India (p. 5) but the maps on p. 152 and 158 contradict this; the range map and text for the Great Pied Hornbill should be extended to Bhutan; the prolonged duet calls of the Great Pied Hornbill are not described; casque dimensions are given only for the Great Pied Hornbill, not for others, even though casque volume is a factor in Fig. 2.4; the essay on Bucerotiformes says brood patch is feathered (p. 89), whereas elsewhere (p. 52) it is not; similar contradictions in use of soil by Great Pied Hornbill for sealing (p. 181 and 182); ground hornbill maximum density of 10,000 ha^{-1} (Table 5.2) seems high; the word *wing* for male *A. narcondami* is omitted from its measurements section; *mass* is used in tables, *weight* in species accounts; and the section on anatomy and biology contains almost no anatomy. Also, much interesting information is found in the tables with disappointingly minimal interpretation of the data in the text (e.g., Table 2.4).

Despite a few nagging problems, the book is an indispensable asset to hornbill researchers and is therefore a must on their shelves, and will be especially of value in the libraries of institutions in countries where hornbills occur.—RAGUPATHY KANNAN, Department of Biology, Westark College, Fort Smith, AR 72913 (e-mail: rkannan@systema.westark.edu) and DOUGLAS A. JAMES, Department of Biological Sciences, University of Arkansas, Fayetteville, AR 72701 (e-mail: djames@comp.uark.edu).