

BOOK REVIEWS

Marcy F. Lawton, Editor

Current ornithology 3 (1986) and **Current ornithology 4** (1987).—Richard F. Johnston, ed., Plenum Press, New York.

This series now has a tradition of excellent, timely, sometimes contentious reviews of topics in modern ornithology. Anyone who doubts the maturity and integrative nature of today's ornithology should look at these books.

Current Ornithology 3 was a feast, presenting controversy over sexual size dimorphism, the curious social behavior of Brown-headed Cowbirds, the commingling of the powerful idea of heterochrony with avian sociality, yet another review of polyandry, predictions about the behavior of "replacement" mates, and even some straightforward conservation biology of birds. My only complaint about the book is its price (\$78.00!).

J. R. Jehl and B. G. Murray's "The evolution of normal and reverse sexual size dimorphism in shorebirds and other birds" provides a great service because it documents the sexual dimorphism in body size of shorebirds, incorporating field measurements of wing length data with weight data culled from the literature. In addition to putting all this information handily in one place, they discuss the correlates and possible function(s) of sexual size dimorphism. Their figures support the broad conclusion that "... in monogamous species intersexual divergence in morphology has been accompanied by the evolution of large differences in bill length, whereas in polygamous species selection has acted to maximize differences in overall size. . . ." They also review the relationship of sexual size dimorphism to foraging behavior, latitude, and mating systems. Their review of theories pertaining to evolution of sexual size dimorphism leads them to de-emphasize many strictly ecological selective forces and to emphasize the correlation of sexual size dimorphism with polyandrous species, and with monogamous and polygynous species that use acrobatic displays to establish territories or to attract mates. Whether one agrees with them or not, this is a pithy paper which will be much appreciated by students of avian size dimorphism.

R. B. Payne's, "Bird songs and avian systematics" is just what it says, a review of the use of bird songs in avian systematics. This is a chapter that reminded me that many of us study birds for the sheer pleasure of it. After all, as Payne points out "The biological constraints on feeding, flying, staying warm, and so on that hold rates of morphological change to conservative limits in birds do not apply to the evolution of signals that are used within a species." Song is a diverse phenomenon and Payne's review defines the limits of song as a systematic character, namely and chiefly, at the species level.

S. Rohwer's "Selection for adoption versus infanticide by replacement mates in birds" is the type of paper he once counseled me to write. It is critical, contains novel predictions, and an outline for a comprehensive

research strategy; in other words, this paper is *useful*. The paper focuses on "evolutionary consequences of sexual conflicts of interest on dependent offspring that have lost a parent." It stresses that infanticide is but one option; adoption and indifference are also possible. The paper provides a comprehensive list of predictions and conditions for each to occur. Rohwer emphasizes that the differences between species in replacement mate behavior require explanation and that quantitative comparisons of parental behavior are still too rare. Among the paper's novel conclusions is that replacing females are more likely to be infanticidal and less likely to be adoptive than replacing males.

S. I. Rothstein, D. A. Yokel, and R. C. Fleischer's eclectic paper, "Social dominance, mating and spacing systems, female fecundity, and vocal dialects in captive and free-ranging Brown-headed Cowbirds," reminded me that Brown-headed Cowbirds may just be the most interesting birds on the planet. I left this chapter with more questions than when I entered it, a sign that the authors achieved their stated goal "to demonstrate the diversity of important topics that can be addressed by studies of cowbird biology." I had the feeling while reading that this chapter may have represented a clean-up operation in which bits and pieces of important studies yet unpublished could be communicated. It is a hodge-podge, one I am grateful for, of important and interesting ideas.

M. F. Lawton and R. O. Lawton's "Heterochrony, deferred breeding, and avian sociality" may be the most provocative and creative of the papers in *Current Ornithology 3*. I know of no other review of the effects of heterochrony in birds, and given the significance of changes in the timing of development of one organ system (or behavioral system) relative to other systems for an understanding of complex sociality in birds, this should be a must-read for all students of avian behavior and ecology. Their chief evidence of paedomorphosis in the class Aves is a table of species with breeding by morphologically subadult birds (again it's nice to have information compiled so handily). They also present a corvid "sampler" in which they discuss the heterochronic trends within the Corvidae; their table II, which shows the duration of juvenile plumage characters and social organization, is a rich source of prediction about the relationships. Their statement that "heterochrony, particularly the neotenic decoupling of rates of morphological and sexual maturation, is an important developmental mechanism associated with the evolution of complex social behavior in birds" deserves to be widely discussed and empirically evaluated. Lawton and Lawton have identified a wide-open area for avian researchers. If you read no other paper in this volume, read this one.

M. F. Willson's "Avian frugivory and seed dispersal in eastern North America" signals the growth of community ecology. Willson is an eccentric writer and I admit to enjoying immensely her immediate challenge

that interactions between plants and animals in the temperate zones may yet prove as interesting as interactions of plants and animals in the tropics. Her review is first a "Who's Who" in which are listed those plants known to be bird dispersed, then a "Who's Who" of the frugivorous birds of eastern North America. The main value of this review would seem to be to point out areas where more information is needed and where future research will be most fruitful.

R. Greenberg's "Competition in migrant birds in the nonbreeding season" is a work-horse review of competition and the distributions of migrant species. The paper focuses, first on how intraspecific competition may act to spread out demographic classes within a species and, secondly, on how interspecific competition may act to limit the distributions of species. This is a well-thought-out, sober review of an area of ecology that demands research attention—especially at this point when we are on the verge of losing many tropical opportunities. The sophisticated observational and experimental studies of natural history of Neotropical migrants demanded by this paper should be pleasant (in new environments for many), intellectually challenging (fueled by old and new theories of competition and even some alternative theories), and ethically and morally relevant (giving us information that may help us save the major disappearing environments).

As have others before him, Lewis Oring notes in "Avian polyandry" that polyandry is not a unitary phenomenon. Listing species with "incidental," "classical," and "cooperative polyandry," Oring's discussion makes it clear that the evolution of polyandry is not understood. Oring's conclusion on this point is that the principal question to be answered is "Why do males tolerate being deserted by females?" Many other readers will no doubt find reason to emphasize some other big questions in polyandry reflecting the principal value of this review; namely, it points out how little we know of this fascinating mating system.

R. W. Risebrough's "Pesticides and bird populations" is an attempt to provide a scientific basis for conservation practice associated with the world-wide use of biocides. There is no doubt that biocides kill birds; not only DDT and aldrin, dieldrin, and heptachlor, but Starlicide®, Ornitol®, and Avitrol® (just to name a few) have had significant effects on local bird populations. The most well-documented effects have been associated with sublethal effects on reproduction. For example, most readers are aware of the devastating effects on Condor reproduction attributed to DDE. The paper argues for more information: data on mortalities associated with pesticide use; data on amounts and locations of exported pesticides; and data on global production of chlorinated hydrocarbons.

M. L. Morrison's "Bird populations as indicators of environmental change" is clear throughout and to the point. "Birds can usually only be used to monitor the effects of a known perturbation if this monitoring is conducted in a controlled experimental design." He also argues that the term "indicator species" is being used much too broadly and that just because a species responds to change does not necessarily make it fit the role of indicator.

S. A. Temple's "The problem of avian extinctions" is the most important paper in *Current Ornithology* 3.

The review discusses the massive avian extinctions anticipated over the next two decades, their causes, and management approaches being used to prevent them. Currently over 240 bird species are listed as endangered in the *Red Data Book*; the list grows longer daily. These sixty families of birds have one or more endangered species. This stark reading is only made easier by the review of "treatments" currently being used to attack and abate the proximate and ultimate causes of species' declines.

Current Ornithology 4 is neither as long nor as expensive as *Current Ornithology* 3. In *Current Ornithology* 4 there are seven chapters for an average cost of \$7.07 per chapter. These range in subject matter from esoteric concerns over the duplication of translation efforts—"A bibliography of ornithological translations" by D. Siegel-Causey and J. G. Hinshaw—to reviews of classic problems such as "Clutch size in nidicolous birds" by E. C. Murphy and E. Haukioja.

R. M. Zink and J. V. Remsen use 69 pages to review "Evolutionary processes and patterns of geographic variation in birds." They have taken on a Herculean task in their review and criticism of morphological data, quantitative analyses of morphological data and of electrophoretic analyses as applied to evolutionary processes such as geographic variation. They have helpfully described an outline of a program of sampling and analysis designed to foster greater sophistication and reliability in evolutionary studies of birds. And they have set out clearly what they think the priorities in the study of geographic variation of birds should be. I view this chapter as essential to systematists and other evolutionists concerned with geographical variation. There is no doubt that other experts in this ornithological subfield will not agree with their review and suggestions; nevertheless, it will be well used in advanced ornithology seminars and by persons updating lectures for general ornithology courses. I also view it as a fine specimen of the variation in articles I now expect in *Current Ornithology*, this one representing those species of articles that are monograph length, but probably not suitable as a stand-alone monograph.

J. P. Hailman's review, "The heritability concept applied to wild birds," contains an explanation of the heritability concept, evaluates some of the sources of error in calculating heritability values, and reviews the empirical data with reference to these errors. The review ends with some comments on the future of quantitative genetics of birds. This was not exciting reading and the conclusions included "the interaction between nature and nurture must be thoroughly explored." Surely we all know this by now. Nevertheless, I welcomed this paper and consider it a valuable contribution—primarily for those unschooled in quantitative genetics who may desire an authoritative review of these ideas and their applications to bird study.

Paleornithologists must be among the rarest breed of students of birds, but "History of the Australian avifauna" by R. V. Rich and R. F. Baird may foster more interest in that little-studied field. These authors have taken an extremely balanced view of their discipline; they describe the record of fossil birds in Australia as poor, but convince the reader of its unparalleled value and interest especially as it applies to paleoenvironmental interpretations.

"Competition in breeding birds" by T. E. Martin is a cautionary tale. Viewed from the perspective of individual selection, it is obvious that the competition debates of community ecology are out of whack and something needs to be done. Martin's review offers concrete suggestions of how empirical studies should go on. Fitness needs to be considered along with manipulations of brood size and food abundance and direct measures of food availability in order to truly evaluate if competition is occurring and in order to measure its effects if it is. This paper also calls for the development of alternatives. The focus on individuals emphasizes the importance of behavior to the fitness of birds: do they orient their territories to minimize spatial overlap with individuals of similar species? Do individuals modify their foraging behavior in the presence of suspected competitors? If they do not, is there an effect on their reproductive success relative to those that do? This chapter will not offer new insights to students of behavioral ecology, but I suspect some students of community ecology will be enlightened by this short read.

Steve Fretwell's dryly titled "Distribution and abundance of the dickcissel" is a witty, warm, and personal paper. It is a pleasure to read, even though it forecasts doom for Dickcissels; Fretwell hypothesizes that their populations are headed for extinction. The paper first reviews Dickcissel life history and distributions and then focuses on ideas and data related to the regulation of Dickcissel populations. Fretwell believes the key to understanding the cyclic nature of Dickcissel abundances lies with the availability of their winter resources on the llanos of South America. This hypothesis provides a number of testable predictions and these are reviewed in an engaging and balanced way. This is a story about Dickcissels, but Fretwell sees that his ideas have some general applicability to birds and addresses two areas where this is no doubt true—patterns in geographic distributions and despotic territoriality. This is a short paper; I wondered why Fretwell didn't give us a book for I would pay the price of this entire volume for more of this natural history in the best hypothetico-deductive tradition of data examined in relation to good ideas not held too closely but respected for their power to inform. Buy *Current Ornithology* 4 if only for access to this chapter!

Ornithology is clearly not just bird study; often, as these books demonstrate, ornithologists are providing cutting edge studies in systematics, ecology, and behavior. I recommend that all professional ornithologists order these books for their school libraries. My only serious complaint about these books is their price, which puts them beyond the price range for personal ownership by most of us.—PATRICIA ADAIR GOW-ATY, Department of Biological Sciences, Clemson University, Clemson, SC 29634-1903.

The ability to predict major changes in biodiversity is becoming an area of immense concern to the international ecological community. Factors that will affect these predictions include our understanding of the local effects of human population growth and intensive agriculture. As Stiles' review makes clear, volumes like the Status of uncommon and

previously unreported birds of El Salvador are important repositories of empirical observations of change in local populations.—M.F.L.

Status of uncommon and previously unreported birds of El Salvador.—Walter A. Thurber, J. Francisco Serrano, Alfonso Sermeño, and Manuel Benítez. 1987. Proceedings of the Western Foundation of Vertebrate Zoology 3:109–293. Los Angeles, CA 90024. \$12.00.

The birds of El Salvador were surveyed quite comprehensively in the 1920s by A. J. van Rossem, whose work culminated in the classic *Birds of El Salvador* by Dickey and van Rossem (1938, Field Mus. Nat. Hist., Zool. Ser. no. 23). Half a century later, this avifauna again received comprehensive study by Thurber and his Salvadorean associates. The intervening years had seen uncontrolled human population growth, deforestation, destruction of wetlands, and increasingly extensive and intensive agricultural practices. The present monograph describes the effects of these processes on the avifauna through the late 1970s—and as might be expected, it makes pretty grim reading. Since van Rossem's time, no fewer than 122 species, close to half of the resident avifauna, have suffered drastic reductions in abundance and geographic distribution in El Salvador, including 14 species totally extirpated. Against this may be set 16 new reports by the present writers, largely cloud forest species from areas inaccessible to van Rossem, migrants, or open-country invaders. Most shocking to me were the drastic reductions in the populations of many open-country and second-growth species that, in Costa Rica, are spreading rapidly following deforestation. I remember some of these species as common in El Salvador during trips in the 1960s. These reductions appear to reflect the conversion of the already-deforested lowlands from cattle pasture to mechanized cotton production. Not only does this virtually eliminate trees and hedgerows over wide areas, but it also requires very high levels of pesticide (including DDT and other persistent compounds) application—cotton is perhaps the worst single crop in this respect—with concomitantly disastrous effects on the fauna. Clearly something to consider when designing T-shirts for the next Cooper meeting! Many of the larger waterbirds, and most raptors, have been reduced or eliminated over wide areas, and past (and present) DDT use seems likely to have played a role. A ray of hope is offered, as the authors note that many forest species seem to be surviving in the few reserves that contain virtually all of the remaining forest in El Salvador. Also, for obvious reasons their treatment extends coverage of the Salvadorean avifauna only through the late 1970s: how the birds have fared during the last 10 years of civil war remains to be seen.

I have a few quibbles. The authors list 59 species, including many migrants, as casual vagrants or accidentals, but overlooked recent work farther south (e.g., Stiles and Smith 1980, *Brenesia* 17:137–156) that would have shed light on the status of many of these. Descriptions of vocalizations are avoided, even when it is stated that these are important in determining the abundance of a species, and when no detailed descriptions exist elsewhere (e.g., White-faced Quail-Dove). This leads them to make several rather odd statements,

such as describing the Bright-rumped Attila as "inconspicuous," when it is perhaps the noisiest bird in the woods! The monograph contains many photos, mostly Dunning-style portraits or of hand-held birds, as well as several of habitats. While attractive, many of the bird photos add nothing to the scientific content of the book and some, like the black-and-white (i.e., unidentifiable) White-throated Flycatcher, are downright frustrating! The main reason I make this criticism is that the resulting higher price might restrict the monograph's readership, especially in the Third World. This would be unfortunate, as the authors' main message is important and timely. Attractively produced with good paper and clear print, the monograph is marred by an unusually abundant crop of typographical errors.

Given the qualifications and experience of the authors, it would have been nice to have included at least a summary table or appendix mentioning the species

that have *not* changed greatly in abundance over the last half century. This might have given an added perspective to the discussion of those that have declined. Also, especially with Dickey and van Rossem's monograph virtually unobtainable, one has nowhere to go for a complete, up-to-date overview of the entire Salvadorean avifauna.

These caveats seem trivial, however, in relation to the authors' main message. This is an important work that deserves to be read widely, as an object lesson of what may await many neotropical avifaunas, should several current trends continue unchecked. I hope that the Salvadorean authors will prepare an appropriately modified Spanish version, that may find its way into the offices of government officials, international planning and financing agencies, and conservationists throughout Middle America.—F. GARY STILES, Escuela de Biología, Universidad de Costa Rica, Ciudad Universitaria "Rodrigo Facio," Costa Rica.