Wilson Bull., 110(4), 1998, pp. 579–584

Ornithological Literature

Edited by William E. Davis, Jr.

AVIAN MOLECULAR EVOLUTION AND SYSTEMATICS. D. P. Mindell, Ed. Academic Press, San Diego, California 1997: 382 pp. $69.95.—Have you ever wondered where the Wancy region is? Or thought about avian numts or the putatively primative Pelecaniforms? There has been a not so quiet revolution going on—building like a logistic growth curve since before the days of Charles Sibley's studies of egg white protein as an indicator of systematic relationships—one with a vocabulary that many ornithologists don't recognize. Now it is exploding into the popular press and onto movie screens through blockbusters such as Jurassic Park. The revolution is not just in our understanding of the inherited chemistry of life. It is also in the way we "do" life. The revolution is having an increasing influence on fields as diverse as ecology, behavior, systematics, conservation, and, yes, even the entertainment industry and our judicial system.

This revolution has been made possible by the development of increasingly sophisticated procedures, by those holding purse strings who have seen the potential for these studies, but mostly by dreamers: scholars who have had the brilliance to ask questions beyond the realm of "conventional biology," dared to invest their careers in seeking answers to those questions, and had the stature and supreme self-confidence to present and defend their work to the scientific community and the world. Yes, along with such progress comes an imaginative vocabulary too.

Avian Molecular Evolution and Systematics is both a primer for those excited or curious about this revolution and a status report of the rapidly growing field. The insights promised by study of egg white proteins and DNA-DNA hybridization were a mere trickle when compared to the potentials of new studies involving the mitochondrial genome. This book is also a reality check and a reassurance for students of morphological variation. High hopes for unlocking a simple key to all evolutionary and systematic answers have been dashed by the realization that, as editor Mindell says, "the evolution of some molecular characters can be as quirky and unique to individual lineages as that seen for some phenotypic characters."

I congratulate the editor on the organization and presentation of this book—it is quite user-friendly in spite of the sometimes complex and esoteric subjects. The one addition that would have made it even more user friendly would have been a glossary that included some of the esoteric terms of molecular systematics. The index helps, since some terms used in earlier chapters are better defined in later ones. The 13 chapters include the efforts of 32 authors and are divided into two major sections: Molecular Sequences and Evolutionary History in Birds (8 chapters), and Applying Phylogeny and Population Genetics to Broader Issues (5 chapters). Authors represent major museums and universities from the United States, Canada, Great Britain, and Denmark. The list of Contents includes not only chapter titles and authors, but also an outline of each chapter indicating the beginning page for each chapter subheading. In a bit of generous redundancy, these outlines are repeated on the first page of each chapter, thus facilitating use for those who rely on reprints rather than buy the book.

Chapters vary from those that focus on techniques, their variations, possibilities, and limits (Chapters 1–4, 9), to application of those techniques to the systematics of Gruiformes (Chapter 5), Pelecaniformes (Chapter 6), and ratites (Chapter 7), to the use of the techniques in ecology (Chapter 10), studies of geographic variation (Chapter 11), speciation (Chapter 12), and studies of paleoecology and conservation (Chapter 13).

Most of the chapters identify pitfalls and provide guidance for practitioners. But different molecular approaches, like using different suites of morphological characters, can provide different answers to the same question. Often such differences can be attributed to differences in interpretation. As a result, contro-

versy abounds even within the molecular systematist community. Relationships among the ratites provide a case in point in this volume: Krista Lee and coworkers (Chapter 7) place kiwis as a basal group and link them with moas, whereas Alan Cooper (Chapter 13) places kiwis in a derived position distant from the moas. One thing seems certain to me: far too much use is made of the word "indicates" in this book and in much of current ornithology. Authors should take a good hard look at the solidity of their data relative to the solidity of their opinion—"suggests" is such a fine word and is usually a much more appropriate alternative.

Certainly this is a book that belongs in university libraries and on the shelves of those with interests in molecular systematics and the application of molecular techniques to other biological endeavors. Michael Crichton might even find some useful material here!—JEROME A. JACKSON.

MONITORING BIRD POPULATIONS: THE CANADIAN EXPERIENCE. Erica H. Dunn, Michael D. Cadman and J. Bruce Falls, Eds. Occasional Paper Number 95, Canadian Wildlife Service: 62 pp., 12 figs., 16 tables. For information about this publication contact: Publications, Canadian Wildlife Service, Environment Canada, Ottawa, Ontario KIA 0H3 (E-mail: mark.hickson@ec.gc.ca).—This is a collection of nine articles from a proceedings of a symposium sponsored by the Society of Canadian Ornithologists and the Wilson Ornithological Society, held in conjunction with the joint meeting of these two societies in Guelph, Ontario, on 29 April–2 May 1993. The objective of the symposium was to provide an up-to-date summary of the kinds of monitoring programs currently underway in Canada. The editors and 15 authors fulfill this objective by producing nine information-rich chapters that cover the major, broad-scale multispecies monitoring programs in Canada aimed at tracking changes in species abundance. The papers are short (generally less than 6 pages each), concise, and well supported with tables and figures. The first few papers deal with waterfowl, seabirds, and shorebirds, which are monitored by government agencies. The remaining six papers deal mainly with land birds, where most of the methods rely on participation of volunteers. The collection of papers documents an impressive effort that is underway in Canada to monitor bird populations. The authors repeatedly point out research gaps either to identify areas of needed study or to suggest caution regarding interpretation. Two of the results that I found most intriguing were the significant relationships between results of the Breeding Bird Survey and Migration Indices (Fig. 2, page 46) and between the Breeding Bird Survey and Christmas Bird Counts (Fig. 2, page 51). If trends for a particular species are similar among these independent monitoring programs, it gives additional confidence in the assessment of their status. For the uninformed or moderately informed, the publication also serves as a very useful starting point for references into various types of avian monitoring programs. For anyone interested in monitoring birds, I would recommend this publication.—THOMAS W. CUSTER.

THE BOOK OF INDIAN BIRDS: TWELFTH REVISED AND ENLARGED CENTENARY EDITION. By Sálim Ali, illus. by Carl D'Silva. Bombay Natural History Society and Oxford University Press, Mumbai (Bombay). 1996: 354 pp., 64 color plates. Rs. 450 (cloth).—This book was issued to celebrate the centennial of the birth of the late Sálim Ali, India's most prolific, incisive, and uncompromising ornithologist. Having witnessed, first hand, Sálim Ali at work in the field, it was clear to me that his love for birds was as strong and as natural in his ninth decade as it was when he published the first edition of this book in 1941, six years before Indian Independence.

The name of Ali has long been associated with that of S. Dillon Ripley because of their ten-volume *Handbook of the Birds of India and Pakistan.* Ali's and Ripley's ornithological writings have become something of a cottage industry, not in the least deterred by the death of Ali and the retirement of Ripley. And this book continues (admirably) in that tradition. Featuring a wide selection of the birds found in India, this handy fieldbook would, I

believe, meet the approval even of Sálim Ali. The key to any field book is the collection of comparative plates, and this edition, with all new illustrations, provides an excellent, if incomplete, visual compendium of the subcontinent's birdlife. These plates are, overall, superior to those of the earlier editions as well as to those found in Ali and Ripley's *Pictorial Guide,* which currently stands as the fieldbook of choice for world birders visiting the region. I should note that the Indian "bird book landscape" will change drastically in the not-too-distant future with the expected publication of not one but two new field guides to the Indian Subcontinent (one British authorship, one American).

Until that time we must make do with what we have—which really is not so bad at all. I have used the *Pictorial Guide* in the field on a number of occasions and found it very useful, although flawed. The new Ali fieldbook looks to be a credible contender for the legion of eager local birders who wish to learn the birdlife without demanding to know all of the rarer species. There are useful facing page notes to the plates, and there are also functional species accounts in the main body of the text. This makes it a useful and user-friendly book for the majority of naturalists and bird-watchers in the region.

One problem facing the book is its linkage to a somewhat archaic nomenclature—that of Ripley's *Synopsis of the Birds of India and Pakistan,* now functionally superseded by the Oriental Bird Club's *Annotated Checklist of the Birds of the Oriental Region.* It will be interesting to see how the upcoming field guides handle the nomenclatural tangle produced by both higher level revisions following the Sibley and Ahlquist revolution and the availability of a series of English name options offered by the various regional and world checklists on the market today. In fairness to the Ali book, alternative names are included at the head of each species account.

This is a likable book that has been lovingly updated. It will find its largest market in India. That is only fitting, given Sálim Ali's strong nationalism, his unshakable love of Indian ornithology, and his multifaceted service to his nation as an ornithologist, conservationist, and senior government advisor.—BRUCE M. BEEHLER.

COLONIALITY IN THE CLIFF SWALLOW. C. R. Brown and M. B. Brown. Univ. Chicago Press, Chicago, Illinois. 1996: 566 pp. Cloth $95, Paper $34.95.—This monograph on the natural history and population dynamics of the Cliff Swallow is a summary of 12 years of study by Charles and Mary Brown at colonies in Keith County, Nebraska, in the Platte River Valley. It is an exploration of the phenomenon of coloniality, its costs, and its benefits. This is also a book that could be used as a model for those interested in monographic studies of behavioral ecology—although most researchers won't have the benefits that come with working with a species like the Cliff Swallow: large sample sizes, predictable and accessible nest sites, open habitat that is easy to work in, ease of manipulation, ease of capture, and plumage markings that lend themselves to unique color-marking schemes.

The Browns begin with a general chapter in which they provide the basics of Cliff Swallows and ask the questions that they focus on for the next 500+ pages. Yes, this is a long book—not an easy evening's read—or even an easy week's read. The major theme throughout the book is "the effect of group size on social behavior and demography" of nesting Cliff Swallows. Chapter 2 discusses techniques used, including adverse affects on the birds, and is a must for anyone contemplating work with this or similar species. Most adults were captured in mist nets, but for parentage studies, nests were plugged with cotton at night to capture both parents with their young. For studies of individual behavior, birds were uniquely marked with paint on their white forehead patch. Between 1982 and 1992, the Browns captured and banded 54,373 Cliff Swallows at their study sites.

Detailed experiments were focused on interplay between swallow and ectoparasite population dynamics. Incidence of ectoparasite infestations of birds increased through the nesting season. Substantial reduction of nestling mass and 50–100% nestling loss in larger colonies is attributed to the swallow bug (*Oeciacus vicarius*). Thus ectoparasites are a major cost of Cliff Swallow coloniality. Predation and responses of the birds to predators were also studied through monitoring and experimental manipulation (chapter 8), and preda-

tion losses were relatively greater at larger swallow colonies, thus again, coloniality is a liability. Evidence for information transfer among foraging birds suggests a benefit of coloniality, but greater brood reduction in larger colonies is suggested to be due to the birds having to travel farther to find food. Reproductive success (chapter 11) varied among years, but was generally greatest for colonies of 30–80 pairs. The Browns suggest this reflects the greater problems of ectoparasitism in larger colonies and the reduced foraging information transfer in smaller ones. Other chapters address nest-site competition (chapter 7), social foraging (chapters 9 and 10), and other factors affecting the birds. The social foraging chapters are detailed and fascinating, demonstrating the values of being a member of a flock for both predator avoidance and location of food. Chapter 12, on survivorship, sorts out many of these interactions. Chapter 14 addresses the evolution of coloniality, concluding that "Cliff Swallows initially formed breeding colonies to permit low-risk group foraging. The other benefits, and all the costs, of coloniality were automatic consequences."

The Browns' studies of these birds have also been reported in more than 20 journal articles. The elaboration here pulls it all together in one magnum opus. I congratulate them on a thorough and most useful book.—JEROME A. JACKSON.

THE MINDS OF BIRDS. By Alexander F. Skutch, illus. by Dana Gardener. Texas A&M University Press, College Station, Texas. 1996: xvi + 183 pp., 41 black-and-white drawings, one table. $29.95 (cloth).—More than a century ago C. Lloyd Morgan warned that "In no case may we interpret an action as the outcome of the exercise of a higher psychical facility if it can be interpreted as the outcome of the exercise of one which stands lower in the psychical state" (1896, *Introduction to Comparative Psychology,* Scott, London. p. 53). This principle has come to be known as Morgan's Canon and, for the most part, it has been diligently observed by mainstream science. In this new book, *The Minds of Birds,* Alexander Skutch challenges this dominant paradigm, suggesting that in the zeal to avoid the stigma of anthropomorphism, students of animal behavior have gone too far. Rather, if we recognize that humans and our avian relatives share both physiological homologies and life experiences, then it is parsimonious to attribute the specific actions of birds to human-like states and processes, such as consciousness, thought, and emotion.

The book is organized into 16 topical chapters, each designed to demonstrate how the mental capabilities of birds have been grossly underestimated. Chapter 1 addresses the extent to which birds recognize individuals of their own species, as well as individual human beings. Skutch introduces the topic by describing the many contexts in which individual recognition in birds is adaptive. He then illustrates the capabilities of birds with numerous examples from the literature, from stories related to him by his colleagues, and from his personal experiences. These accounts are both informative and entertaining. For example, he describes several instances where certain birds developed the habit of attacking particular humans while ignoring others. The attacking birds generally were not fooled when the targeted human exchanged clothing with a tolerated conspecific companion, suggesting that these birds recognized either facial characteristics or some other anatomical or behavioral features of their "enemies."

Chapter 2 deals with memory and expectation. Skutch presents numerous accounts of birds behaving contrary to the "widely held view that birds live only in the present, without conscious memories of the past or anticipation of the future." Many of the accounts are anecdotal, such as the behavior of a pair of Crimson-backed Tanagers (*Ramphocelus dimidiatus*) toward a snake near their nest; they continued to act in an agitated manner for a considerable time after the snake had been removed. The examples of caching behavior are more objective (e.g., corvids store up to 100,000 seeds with a recovery rate of 50–99%) and provide an impressive demonstration of avian memory.

Other chapters address social life, emotion, play, counting and timing, tool using, aesthetic sense, intelligence, freedom and altruism, and homing and migration. Another chapter is devoted to the apparent language skills of Alex, an African Gray Parrot (*Psittacus eri-*

thacus) who has been collaborating with Irene Pepperberg. A summary and concluding remarks are presented in the final chapter.

Although Skutch provides a wealth of information, much of it not previously available in the published literature, some readers undoubtedly will disagree with his interpretations of the data presented. For example, in Chapter 5, he concludes that birds, especially immatures, may sing for amusement or enjoyment alone, but he does not explore the possible selective advantages that a young male would gain by practicing and perfecting his species-specific vocalizations. Similarly, in the chapter on the emotions of birds, the tonal quality of calls elicited by the presence of an enemy are likened to those emitted by humans in similar circumstances, but the adaptive significance of wide-band dissonant alarm calls (vis-a-vis, high-frequency, narrow-band "seet" calls) is not discussed.

Skutch employs a comfortable writing style that will be accessible to both the scientific and lay communities. The attractive line drawings by Dana Gardener illustrate the species being discussed and effectively complement the text. The book is well produced; this reader found only a couple of typographical errors.

The objectives of *The Minds of Birds* are clear: to persuade the reader to reconsider the ability of birds to think and experience emotions, and to convince that reader that a bird's psyche is far more similar to that of a human than is generally regarded. Skutch succeeds with the former objective; this book is certainly thought-provoking. There will be a wide range of opinions in regard to the latter objective. For both reasons, I recommend this book.—JOHN A. SMALLWOOD.

PARTNERSHIPS IN BIRDS: THE STUDY OF MONOGAMY. Jeffrey M. Black, Ed. Oxford University Press, Oxford. 1996: 420 pp., 19 chapter heading drawings, numerous figures, graphs and tables. $55 (paper).—This book is a useful summary and analysis of some of the voluminous literature on mating systems in birds. As the subtitle indicates, the focus is on birds that are monogamous, but in the first chapter the editor points out that the whole concept of monogamy has changed drastically during the last few years—that we now realize that a female's choice of a breeding partner may be relatively unrelated to her choice of genes for her offspring. So the main question that the various authors consider is why and under what conditions monogamous social relationships persist. To understand this issue requires looking at the costs and benefits of social monogamy, and what factors constrain other options.

The first three chapters provide the theoretical framework for the examination of the case studies that follow. In chapter one the editor describes the working hypothesis of the book: that pair stability benefits individuals by increasing their ability to acquire resources for reproduction and survival. Furthermore, the relationship between pair members is viewed as dynamic; individuals are constantly reassessing the costs and benefits of staying and leaving. A brief description of the various hypotheses for why monogamy persists, and an overview of possible benefits and costs of staying with a breeding partner, follow. The chapter concludes with the guidelines followed by the contributing authors. This is helpful, since it means that the data for different species can be compared more directly than is usually possible.

In the second chapter the origin of mating systems is discussed, and a new hypothesis is proposed for the origin of social monogamy with genetic polygyny. The "constrained female hypothesis" considers mating partners as resources and looks at reproductive patterns in terms of animals manipulating their resources. This view suggests that when females are the limiting reproductive resource for males, males will be under strong selection to manipulate females. The ability of females to control their own reproduction, therefore, is critical to understanding the evolution of mating systems. This hypothesis differs from others in focusing on *female* quality, and the quality of the female's habitat. It suggests that high-quality females, or females in high-quality habitats, will be better able to resist male efforts, and therefore be able to control the level of extra-pair paternity. Such females will also be better able to rear offspring with little or no help from the male; thus they will suffer less if males decrease parental care as a result of decreasing certainty of paternity. Multiple

mating by females may arise, therefore, when females attempt to get the best genes possible under ecological or social constraints, and they can overcome males' efforts at manipulation.

In the final introductory chapter the relationship between monogamy and parental care is addressed. Specifically, the evolution of biparental care is seen as the key to understanding monogamy and this focus leads the authors to suggest that the structure of the family is the appropriate level of study. The authors suggest that simple mathematical modeling may be useful for making predictions which short-term experiments could test. This chapter shows how long-term data, such as those presented in the rest of the book, may be complemented by relatively simple, directed studies.

The 14 chapters making up the bulk of the book present case studies on a variety of socially monogamous birds, focusing on mate fidelity and the costs and benefits of divorce. While all of the species presented are socially monogamous, the entire spectrum of genetic contribution by the male is covered: from Bewick's swans where no extra-pair paternity is found, to promiscuous Splendid Fairy-wrens, where the majority of offspring result from extra-pair fertilizations. A good variety of species is covered—from the well known monogamous systems of ducks and swans, to perhaps lesser known systems such as penguins and ptarmigan.

The last two chapters summarize and synthesize the empirical data. Chapter 18 brings the discussion back to evolutionary forces—specifically the relationship between mate fidelity and sperm competition (both important aspects of mate choice) and sexual selection. The various hypotheses for the evolution of monogamy are reviewed and evaluated, with the constrained female hypothesis as the focus. The authors use the case studies and other examples from the literature to test this hypothesis. They conclude that their preliminary tests of the constrained female hypothesis look promising, but that more data and controlled studies are needed, especially in light of the great variability seen both among and within species. Finally, in the last chapter we revisit the basic question on which the book focused: Why do some monogamous birds remain faithful and others divorce? The authors summarize the empirical data presented earlier. They discuss the various mechanisms of pair formation and mate change, the costs and benefits of staying and leaving, the features of "good mates," and the importance of phylogenetic comparisons. They suggest that a comprehensive theoretical framework to explain mate fidelity and divorce is lacking, and they look to a recent mathematical theory as an important first step. Finally, they make suggestions for how future studies could further the field. This final chapter is a bit disappointing in its inability to draw far-reaching conclusions, but as the authors point out, this probably reflects our current lack of theory and, despite all of the long-term studies presented, appropriate data.

Overall this book will be a very useful reference for anyone interested in trying to wade through the empirical and theoretical literature regarding mating systems in birds. Although the theoretical chapters are rather heavy, they offer both a comprehensive review and some new insights. The species accounts provide an interesting look at one aspect of avian behavior, especially considering the long-term nature of these studies. Together these chapters present a complete review of monogamous mating systems in birds.—MARTA HERSEK.