

BOOK REVIEWS

MARCY F. LAWTON, EDITOR

Avian monogamy.—Patricia A. Gowaty and Douglas W. Mock (eds.). 1985. Ornithological Monographs No. 37. The American Ornithologists' Union, Washington, DC. vi + 121 p. \$11.00 (\$9.00 to AOU members).

"On the surface," writes Mock, "monogamy has seemed relatively tame and uniform . . . the whole package seems bland" (p. 1). In *Avian monogamy*, an unusually fine marriage of theory and data, Gowaty and Mock have collected a series of essays that probe below the surface of what Mock calls "the neglected mating system." They reveal a complex set of breeding behaviors that challenge our basic concept of mating systems.

On the surface, of course, monogamy occurs when one male mates with one female; and on the surface, about 90% of the world's birds are monogamous. However, in recent years field studies of apparently monogamous color-banded individuals of several species have shown that monogamy is not a single, straightforward mating system, "but a diverse array of reproductive strategies" (Mock, p. 4) in which neither pair bonds nor dispersion of breeding individuals are as highly correlated with genetic mating patterns as generally thought.

The eight accounts presented in this gem of a monograph strongly support the authors' contention that extra-pair copulations and consequent multiple parentage of apparently monogamously produced clutches occur regularly enough to be considered secondary reproductive strategies. These variations are interesting evolutionary phenomena and call into question a terminology which "sacrifices information by lumping so much variation under one heading" (Mock, p. 4).

For instance, in her lucid chapter on "Multiple parentage and apparent monogamy in birds" Gowaty reports that her observations of Eastern Bluebirds have revealed multiple parentage in 25% of a sampled population. She goes on to articulate the behavioral mechanisms by which multiple parentage can occur. Her precise analysis should be useful to all students of mating systems.

Similarly, Frank McKinney's excellent review of male reproductive strategies in Dabbling Ducks does more than call our attention to the fact that extra-pair copulations are known to occur in 21 of 37 members of the genus *Anas*. His comparative approach allows him to present a coherent theory of the ecological constraints on male reproductive strategies. Clearly written, McKinney's review generates a set of explicit predictions and opens the way for sound hypothesis testing.

In the one case in which field observation seems to support an old-fashioned, one male/one female monogamy, mate fidelity may occur because the birds are too busy foraging to philander. Bruce Beehler's account of the adaptive significance of monogamy in Trumpet Manucodes, arguably the most sophisticated piece of socioecology in the monograph, reports a strong correlation between the availability and spatial dispersion of preferred food and mating system in Birds of Paradise.

In addition to presenting empirical evidence for variations on the monogamous theme, *Avian monogamy* is also rich in thoughtful suggestions on how to tease out the separate components that have traditionally been lumped into the catch phrase "mating system." Gowaty, Mock, and Bertram G. Murray, Jr., each argue that it is important to distinguish between such disparate phenomena as dispersion of breeding adults, the nature and duration of the pair bond, and actual gametic contributions of individuals to mating.

Because the genetic consequences of mating behavior are critical to evolutionary theory, Gowaty suggests a method by which individual mating tactics may be used for the collective characterization of mating systems. She suggests that the genetic contributions of individual males and females may be used to construct what she terms Genetic Contribution Ratios. Whether or not the reader agrees with her assertion that defining mating systems in terms of such measures is simple, such definitions would clearly distinguish the genetic character of mating systems from patterns of dispersion and pair bonding.

On another tack and altogether more controversial is Nancy Burley's account of the organization of behavior and the evolution of sexually selected traits. Although her essay reports a set of experiments on the monogamous Zebra Finch (*Poephila guttata*), her contention that animals have "evolved plans of procedures for making decisions and implementing behaviors" is not limited to monogamous species.

The crux of Burley's argument is that genetically based "assessment programs" pre-adapt animals to respond to novel stimuli in ways that enhance differential reproductive success. If such programs exist, she argues, then the evolution of sexually selected traits may be very rapid. In support of this argument, Burley presents the results of an imaginative set of experiments with captive birds. In fact, she does report sex-specific behavioral responses to the novel color patterns produced by colored leg bands.

However, the extent to which her results support the existence of GAPs (General Assessment Programs) or PRPs (Pattern Recognition Programs) is bound to remain controversial, if only because a GAP is no less nebulous a concept than "an allele for" a given behavior. Although Burley is undoubtedly justified in rejecting naive genetic accounts of the evolution of behavior, it is not clear that substituting a computer-age analog—i.e., a program—is any more informative. Despite its controversial aspects, however, Burley's contribution adds spice to what can no longer be considered a bland area of research.

In all, *Avian monogamy* gives new meaning to the old saw about judging a book by its cover. Beneath the unprepossessing blue paper binding, *Avian monogamy* offers a rich and varied brew—and for \$11 (\$9.00 to AOU members), it's probably the bargain of the year.—MARCY F. LAWTON, Department of Biological Sciences, University of Alabama in Huntsville, Huntsville, AL 35899.

The encyclopedia of birds.—Christopher M. Perrins and Alex L. A. Middleton (eds.). 1985. Facts on File Publications, New York. 480 p. \$35.00.

As far back as Aristotle—and even he had predecessors—writers have periodically produced comprehensive treatises on birds. This volume, the latest such effort in English, is a survey of living bird families with articles arranged taxonomically rather than alphabetically. It is not an encyclopedia in the usual sense; it is an oversize, generously illustrated volume, at first glance an ornament for the coffee table, yet it actually contains much substance. Although aimed for readers with an amateur interest in birds, it offers much of value to professionals.

The introduction characterizes the class of birds in terms of its origin and early evolution, anatomical and physiological features, special senses, and patterns of breeding. The treatment is general and conventional—adaptations

for flight—yet marred by several incorrect or misleading statements and illustrations.

The meat of the book is a series of family accounts, arranged mainly in the Wetmore sequence. Differences of opinion on the classification of orders and families are stated briefly in a prefatory note, adequate for the book's intended audience. Within families, the number and arrangement of species tend to follow Gruson (1976) although they have been modified where desired by the specialist-contributors. The series has been divided into three sections (Ostrich to finfoots, plovers to woodpeckers, and passerines), though to no evident purpose. Large or distinctive families are given separate chapters, whereas small or closely related ones are combined.

For each family, basic data are given in standardized format within one or two tables: a distribution map; a summary of habitat, body size, appearance, voice, breeding habits, and diet; and a list of all or selected species. The text goes into more detail, characterizes the subgroups, if any, and integrates the biology so as to show the chief adaptations in the family. Conservation problems are often discussed, and the status of possibly endangered species is indicated by symbols.

Many accounts contain sidebars or short feature articles that either delve into a special aspect of the family or use the group as illustrative of a common phenomenon. For example, the chapter on penguins carries one piece on diving and another on adaptations for breeding in a very cold environment.

Selection of species and topics is always a hazard in books of this kind. Knowledgeable readers will feel that some subjects have been given short shrift in this book. There is a tendency to favor western European members of wide-ranging families and to regard them as representative of their group. On the whole, though, the articles are accurate and well balanced.

Illustrations are a major component of this book. Many of the photographs and drawings are excellent, although faulty morphological details in some of the drawings suggest that the artists did not understand the reference pictures from which they were working.

The distribution maps are all in the same format, which aids comparison of ranges but means that limited ranges, especially on coasts and islands, are hard to see. In the map for the ranges of cuckoos and turacos, the labels are reversed.

The list of references is thin, particularly in regard to general works and those on families or groups. The book includes a glossary of ornithological and other biological terms, a welcome and unique feature in works of this kind.

This is just the sort of book that many of us would have pored over as youngsters, entranced by the beauty, diversity, and strange ways in the Class Aves. If you need a reference on bird families, this is the volume of choice. But if you have a copy of Evans' *Birds* (1899) or Knowlton's *Birds of the world* (1909), don't give them up; they contain details of morphology and nesting that all the newer works have left out.—PETER STETTENHEIM, Meriden Road #64-255, Lebanon, NH 03766.

BOOKS RECEIVED

AUSTIN, O. L. 1985. Families of birds. Golden field guides. Western Publishing, New York. 200 p. \$7.95.

BEDDY, E. C., AND A. L. GRANHOLM. 1985. Discovering

Sierra birds. Yosemite Natural History Assoc. and Sequoia Natural History Assoc., Yosemite National Park, CA. 229 p. \$9.95 + \$1.00 shipping and handling.

BROWN, D. E. 1985. Arizona wetlands and waterfowl. Univ. of Arizona Press, Tucson. 169 p. \$24.95.

BRUUN, B. 1985. Common birds of Egypt. Columbia Univ. Press, New York. 51 p. \$12.95.

CODY, M. 1985. Habitat selection in birds. Academic Press, Orlando, FL. \$69.50.

COLLIAS, N. E., AND E. C. COLLIAS. 1984. Nest building and bird behavior. Princeton Univ. Press, Princeton, NJ. 336 p. \$45.00 cloth, \$16.50, paper.

FARNER, D. S., J. R. KING, AND K. C. PARKES. 1985. Avian biology. Vol. 8. Academic Press, New York. 256 p. \$49.50.

FEDUCCIA, A. Catesby's birds of colonial America. Univ. of North Carolina Press, Chapel Hill. 176 p.

JACKSON, M. H. 1985. Galápagos: a natural history guide. The Univ. of Calgary Press, Calgary, AB, Canada. 284 p. \$17.50 + \$1.50 postage and handling.

KOHN, D. [ED.]. 1986. The Darwinian heritage. Princeton Univ. Press, Princeton, NJ. 1,138 p. \$95.00.

KRESS, S. 1985. The Audubon Society guide to attracting birds. Scribners, New York. 384 p. \$24.95.

MACCREAH, G. 1985 reprint of 1926 volume. White waters and black. Univ. of Chicago Press, Chicago. 335 p.

MATTHEWS, G.V.T., AND M. A. OGILVIE. Wildfowl 36. Wildfowl Trust, Slimbridge, Gloucester, England. 156 p. £8.00.

MELTOFTE, H. 1985. Populations and breeding schedules of waders, Charadrii, in high arctic Greenland. Meddelelser Om Gronland, available through Arnold Busck International Booksellers, Copenhagen. 44 p. Dkr.74 + postage.

NETTLESHIP, D. N., AND T. R. BIRKHEAD. 1985. The Atlantic Alcidae. Academic Press, Orlando, FL. 574 p.

NEWTON, I., AND R. D. CHANCELLOR. 1985. Conservation studies on raptors. International Council for Bird Preservation, Cambridge, England. Tech. Publ. No. 5. 482 p. £25.00.

ORIAN, G. 1985. Blackbirds of the Americas. Univ. of Washington Press, Seattle. 164 p. \$24.95.

PARKER, T. A. 1985. Voices of the Peruvian rainforest. Cornell Laboratory of Ornithology, Ithaca, NY.

ROBERSON, D. 1985. Monterey birds. Monterey Peninsula Audubon Society, Pacific Grove, CA. Available from Monterey Peninsula Audubon Society, % V. Volmenski, Box 52022, Pacific Grove, CA 93950. 266 p. \$16.00.

SCHUCHMANN, K. L. African vertebrates. 1985. Zoologisches Forschungs-Institut Und Museum Alexander Koenig, Bonn, Germany. 585 p. DM78.

SNOW, D. 2nd ed. 1985. The web of adaptation. Cornell Univ. Press, Ithaca, NY. 173 p. \$7.95.

TEMPLE, S. A. 1986. Bird conservation: no. 2. Univ. of Wisconsin Press, Madison. 180 p. \$17.50 cloth, \$12.95 paper.

WILLIAMS, A. J., J. COOPER, I. P. NEWTON, C. M. PHILLIPS, AND B. P. WATRINS [EDS.]. 1985. Penguins of the world: a bibliography. British Antarctic Survey, Cambridge, England. 255 p. £11.50.

ZIMMER, K. J. 1985. The western bird watcher. Phalarope Books, Prentice-Hall, Englewood Cliffs, NJ. 278 p. \$19.95 cloth, \$10.95 paper.