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Pigeons and Doves: A Guide to the Pigeons and Doves of the World.—David Gibbs, Eustace Barnes, and John Cox. 2001. Yale University Press, New Haven, Connecticut. 615 pp., 76 color plates, 310 text figures. ISBN 0-300-07886-2. Cloth, \$60.00.—After waiting nearly three decades, a decent book now exists that describes and illustrates all living species of Columbidae. The text is by freelance ecologist and naturalist David Gibbs and wildlife artist and bird-tour leader Eustace Barnes. The color plates are by Eustace Barnes and John Cox. The plates are very nice, although showing each and every species in flight might be overkill, especially for pigeons and doves not known to fly anymore (if ever), such as *Micropodura meeki* (plate 44).

Pigeons and Doves is loaded with identification-related information, most of which, as far as I can tell, is accurate. Inaccuracies include repeating the botched story of the extinct Reunion Solitaire ("*Raphus*" *solitarius*, p. 173), which Gibbs et al. say was a columbid even though Mourer-Chauviré et al. (Smithsonian Contributions to Paleobiology 89:1–38) have shown that this insular endemic was an ibis (*Threskiornis solitarius*), not a pigeon. Resurrecting *Caloenas maculata* (pp. 394, 395, plate 44), a doubtfully valid species based on an eighteenth-century, juvenile specimen of unknown locality in the Merseyside County Museum, seems a stretch for a book aimed to please birdwatchers. Gibbs et al. speculate that *C. maculata* might be "the bird that cried 'titi' on Tahiti" (great name for a cheap movie, huh?). This is unlikely because "titi" is an onomatopoeic name throughout East Polynesia for procellariids, especially shearwaters. The authors also repeat (although unreferenced) the old but untrue adage that *Didunculus* is a primitive, relictual genus perhaps related to *Raphus* or to parrots (p. 584).

Picky mistakes, such as misspellings of island names, can be found regularly but are easy to excuse. Errors of omission are more common than those of commission. Targeting ~30 species of Neotropical and Oceanic columbids that I know fairly well, I found errors of one sort or another in about half of the accounts, such as omitting the West Indies in the range map of *Geotrygon montana* (p. 389), or saying that *Ptilinopus perousii* is "not often found near human habitation" (p. 479) when in fact this fig-specialist lives in villages as long as fruiting fig trees are present (Steadman, *Pacific Science* 52:14–34).

The book has 585 pages of text, covering 319 species in a popular family of birds that has fascinated people since long before we were literate, but has only 7.7 pages of literature citations. Barry Taylor's recent (1998), similarly formatted, and highly informative book *Rails*, for example, covers 145 more poorly studied species with 557 pages of text followed by 34.8 pages of literature citations. This 10-fold difference (0.024 citation-pages per species in *Pigeons and Doves* vs. 0.24 in *Rails*) undermines the scholarship in the former and therefore limits its utility to scientists. Related to that is Gibbs et al.'s exceedingly brief introduction (pp. 13–15).

Selfishly I note that, from 1980 to 1999, I published 45 journal articles or chapters in books that dealt substantially or exclusively with columbids, especially on islands. Gibbs et al. cite none of them, even though much of what they mention about extinction of Polynesian columbids (pp. 13, 14, 413, 543) is derived from those papers. Ignoring my papers also results in inaccurate range maps for Polynesian columbids, whether you consider just the modern range or the combined modern and prehistoric range, the latter being most useful to biogeographers. Should I feel bad that Gibbs et al. opted not to cite any of my papers? If the book were meant to be a superficial skimming once-over the columbids, the answer would be no. Given the comprehensive and authoritative intent of this work (see p. 16 as well as the dust jacket and advertisements), however, they should have given credit where it is due. How, for example, could they have failed to cite Baptista et al. (*Handbook of Birds of the World*, 4:60–243), the only other place where all living species of columbids are illustrated in color?

Gibbs et al. state their indebtedness to Nigel Collar for "meticulous and dedicated editing of the entire text" (p. 12). British conservationists are aware of, and their work benefits from, my and other overlooked research (published in journals such as *Conservation Biology*), but they are disinclined to cite it because we are evil museum scientists who occasionally collect birds. A "holier than thou" attitude pervades many bird books written in Britain these days. (*Pigeons and Doves* was produced at Pica Press in Britain; it is sold in the colonies by Yale University Press.)

Pigeons and Doves is important for providing modern color plates, range maps, and descriptions of plumages, including subspecies, of columbids world-wide. Other aspects of columbid biology (systematics, evolution, biogeography, behavior, foraging ecology, breeding biology, etc.) are poorly covered. On average, birdwatchers will like it more than ornithologists. This is what we have come to expect nowadays from university presses, who realize that birdwatchers make up a larger market than scientists.—DAVID W. STEADMAN, *Florida Museum of Natural History, University of Florida, P.O. Box 117800,*

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Models of Adaptive Behaviour: An Approach Based on State.—Alisdair I. Houston and John M. McNamara. 1999. Cambridge University Press, Cambridge, England. viii + 378 pp. ISBN 0 521-38480-X. Hardback, \$80.00 ISBN 0-521-65539-0. Paper, \$34.95.—There are two types of review book written by long-time experts in a field. The first emerges when the resident experts synthesize their accumulated (and typically prolific) work into a unified whole. That process involves cutting across domains of their original articles to create a new work in which all the relevant work is revisited and reworked holistically in light of their accumulated experience. Done well, such books often preempt the need to read and cite the original articles, for the most relevant material is available in the synthesis. Such books are often ideal for graduate courses: the purchase of the book provides the student with access to the field as a whole. The alternative type of review book emerges when the experts in question collate summaries of their accumulated works into an organized whole, with the organization revealing the structure not apparent in the original stream of publication of works in progress. That latter approach necessitates continued reliance on the original articles, with the book, in effect, providing an annotated road map to the location in the literature of the key ideas. Such is this latest work from the long-time collaboration of the theoretical biologist Alisdair Houston and the mathematician (and biologist) John McNamara.

State-based modeling considers the behavior of an organism to be characterized by a set of state variables that track body size, energy reserves, quality of territory, and so on, variables that collectively quantify the quality of the organism. In many ways, the concept of state is to the organism what the Hutchinsonian hyper-dimensional niche is to the species, and state variables impose constraints and determine costs and benefits of particular courses of action for the organism. In evolutionary terms, an organism should have a strategy that guides its response to every set of circumstances in which it finds itself, with the optimal strategy being that which maximizes fitness. The problem is that, among organisms following the optimal strategy, there will inevitably be differences in many state variables that may limit their potential for future offspring. One

must resort to the concept of reproductive value to index that potential for each state. In other words, the organism (and researcher) must determine what strategy yields the maximum pay-off for a given state (i.e. the pay-off from performing any particular action as the sum of the reproductive values of any offspring that directly result from the action, plus the expected reproductive value of the organism after it has performed the action). This may be a simple task for a single action but the value of a current action usually depends on future actions. Hence one has to somehow determine a suitable outcome point in the future and work backwards to assess the value of the current action, often via a numerical approach known as “dynamic programming.” Solving state-dependent dynamic models is hard work, by anyone’s standards, particularly if one wishes to generalize the resulting findings. This book addresses analytical and computational procedures available in making those determinations, using simple state-dependent models along a spectrum from simple to complex. Those models in turn may either be, by themselves, sufficient to solve simple problems or they may provide greater understanding of more complex situations requiring full dynamic programming and generalized models. That is an area of research in which Houston and McNamara have been preeminent, in a collaboration that has yielded more than 75 publications on state-based behavioral modeling over the last 20 years.

The present work is organized into 10 chapters. The first is a short introductory chapter that introduces three key ideas—the concept of state, the utility of reproductive value as a common currency in evaluating merits of alternative behavioral strategies, and necessity of dynamic programming in evaluating actions whose fitness will be affected by other actions yet to be taken. The rest of this chapter outlines the authors’ thinking about models. It describes the structure of the book, and sketches three areas where the writing of the book reveals a pressing need for more work to be done (namely physiology, interactions between animals, and determining the problem each animal is built to solve).

Chapter 2 takes a quick sweep through the components of behavioral decision modeling—state variables, reproductive value, actions, optimal decision, and the nature of trade-offs (in life histories, between energy and time, and between foraging and predation). This sets the scene for the third chapter in which the notion of dynamic optimization is developed. The first half of this chapter is very clearly written but mid-way through it an exasperating truncated style sets in. In essence, the authors’ strategy is to provide clearly written summaries of previous work (often, and appropriately, their own), but all too often omitting technical details for which the reader is given a citation to the original paper. That is an adequate strategy if a book is to summarize the