

BOOK REVIEWS

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MANY VIEWS OF BIRD POPULATIONS

Bird Population Studies. Relevance to Conservation and Management.—C. M. Perrins, J.-D. Lebreton, and G.J.M. Hirons [eds.]. 1991. Oxford University Press, Oxford, England. 683 p. ISBN 0-19-857730-3.

This book arises from an international symposium held at the *Station Biologique de la Tour du Valat*, an institution in the Camargue promoting the protection and management of threatened Mediterranean biotas. It has the *bona fides* of an important work: chapters by respected theoretical and avian ecologists on topics of intellectual and practical significance, as the first in a new Ornithology Series by a distinguished press. I hesitated to agree to review it, having been deflected for many years from some research on bird populations by beasts greater (seals) and lesser (copepods). A 683-page book is not a quick and easy refresher, but I am grateful for the enlightenment.

The book's chapters are organized, in some cases rather arbitrarily, into five sections. There is considerable overlap among certain chapters, while for some subjects "an entire book would be necessary" (Blondel, chapter 3).

Three opening chapters on *the comparative approach* begin with an update of his 1979 book by Ian Newton, who concludes again that raptors are regulated by availability of nest sites or food supply. Ian Rowley and Eleanor Russell usefully survey population studies of south temperate passerines, confirming the resemblance of their life-history parameters to those of tropical, rather than north-temperate counterparts. Jacques Blondel's chapter on birds in biological isolates has interesting caveats on and refinements of classical island biogeography, although some statements about the early history of population and community ecology seem mildly revisionist. He stresses that passerine populations in primeval north temperate habitats may be regulated by predators, and not exhibit the presumed competition for resources that has underpinned so much population and community theory; the dynamics of the much studied western European parids may be in a sense artificial.

In the second section on *estimating the parameters*, J.-D. Lebreton and Jean Clobert offer two pivotal chapters on estimating demographic parameters and on mathematical modelling for management and conservation. Original methodology is hardly to be expected, but both chapters are wide-ranging yet concise, with clear guidance for those contemplating study of bird populations. There are useful references to software and encouraging comments on bypassing the algebra for those who nevertheless can clearly articulate their needs.

Some of the nine chapters grouped under *species approaches* marginally update previously published ac-

counts, while others are substantially novel. It is heartening to see results of much long-term work. Robin McLeery and Christopher Perrins conclude, from studies of the irrepressible Great Tits of Wytham Wood, that "effects of predation on small bird populations are often smaller than one might expect." However, as noted above, this conclusion may not offer conservation guidance for much of the world, including primeval north temperate habitats. Jamie Smith and colleagues bring us up-to-date on the Song Sparrows of Mandarte Island, British Columbia, finding implications for management through supplemental feeding, predator control, and transplanting of threatened birds. Demographic and distributional analyses of Snow Geese, west European White Storks, Mute Swans, and Greater Flamingos of the west Mediterranean region show, not surprisingly, that their populations are restricted by habitat saturation, exacerbated by strong fidelity to sites that may be threatened by additional anthropogenic degradation. One sympathizes with Franz Bairlein's distaste for "semi-captive," non-migratory White Storks, but what if "protection and restoration of adequate habitats," as "the only sensible recommendable methods," are now beyond reach for such populations? A chapter on demography of Atlantic Puffins and two chapters dealing largely with Antarctic seabirds, again not unexpectedly, note the threats from our exploitation of their resources, direct mortality of adults of larger species in fisheries bycatches, and introduction of land predators in breeding colonies of smaller species.

Some chapters grouped under *further issues* might have been placed in the first two sections. I wonder if elegant abstractions of demography and habitat choice, so prevalent in the heyday of theoretical ecology and still of great heuristic value, can help solve real-world problems. For example, Carlos Bernstein and colleagues offer, after one modelling exercise, "an intuitive explanation of this surprising result," suggesting that very general models and simulations of distributions among habitats might not produce insights that would elude good field workers. A chapter on parasites, cuckoos, and avian population dynamics by Andrew Dobson and Robert May also seems to me to contribute less than might be hoped. For example, do we need again to go through the conditions for 'chaotic' or even cyclic behavior of populations whose functional and numerical responses preclude such patterns? The conclusions by Dobson and May, that parasites are unlikely to affect rare hosts and that, contrarily, might be used to control introduced competitors, are nevertheless worth keeping in mind. A more concrete chapter by Peter Hudson and Dobson shows neatly that a nematode of red grouse can be controlled chemically and a virus by treatment of sheep, its favored host. (Bird-parasite interactions are more fully explored in the second volume in the Oxford Ornithology Series.) Richard Potts and Nich-

olas Aebischer update the former's book on the Gray Partridge. Their models of populations in Sussex, England, with complete partitioning of mortality into density-independent, density-dependent, and hunting sources, are verified by field experiments. Surely theirs must be among the most fully understood of any exploited populations. A chapter on conservation of migratory shorebirds by Peter Evans seems sketchy. One by Myrfin Owen and Jeffrey Black on migration mortality in non-passerines is largely an update of Owen's work on Barnacle Geese, which conform to examples in the previous section (but here with more metabolic groundwork) of large species saturating their breeding and flyway habitats. Finally in this section, it is gratifying to learn from Peter Beckner that seabirds breeding on the notorious North Sea coast are rebounding and now may be most useful for monitoring future pollution problems.

There are illuminating chapters in the section on *species management*. Feare documents the futility of large-scale killing of pests such as Red-billed Quelas, European Starlings, and Rock Doves, and concludes that local discouragement is the best that can be done. On the other hand, John Coulson reviews the evidently successful and more widespread effects of culling gulls at breeding sites in Britain. Reviews of responses to exploitation (James Nichols) and management (Hugh Boyd) of North American waterfowl suggest that enormous expenditures of time and money have not produced deep understanding. Nichols, like some fisheries scientists, suggests that large-scale, unfettered, management "experiments" may be the only way to parameterize full functional relationships. Glen Wolfenden and John Fitzpatrick update their ongoing study of the Florida Scrub Jay. Theirs is a rare example in which variances of demographic and environmental stochasticity in small populations have been determined, and not merely postulated in lieu of poorly understood causality. Russell Lande reviews clearly and concisely his methods for estimating such variances. The fate of the Northern Spotted Owl hangs in a balance between reproductive output and mortality of dispersing juveniles in increasingly fragmented breeding habitat. Lande's prognosis is gloomy and one can only hope the proposed remedies summarized by Verner (1992, *Condor* 94:301-303) are feasible. An overview by Michael Rands and a more analytical account by Rhys Green and Graham Hirons largely consider the 1,029 birds listed as threatened with extinction in the ICBP compendium by Collar and Andrew (1988). It is interesting that Rands is able to list "causes" (e.g., 41% forest destruction, 15% introduced predators or competitors) for all but 22% of a subset of threatened African species; lack of means or will rather than lack of understanding seems paramount in loss of species. Green and Hirons surprise us with several conclusions from population studies of threatened species. For example, there is no correlation of either estimated multiplication rate or its variance with body size; no simplistic view here of "r" and "K" species. They deplore the lag between evidence, however weak, and action, and conclude that conservation "success has often owed more to common sense and good fortune than to a rigorous scientific analysis."

Ian Newton's *concluding remarks* do not always reflect the book's contents. For example, he relates demographic changes to "declines" in Atlantic Puffins and Snow Geese, whereas the pertinent chapters deal with approaches to equilibrium, and he offers the usual arguments on body size and demography without reference to Greens and Hirons' empirical survey. Newton reiterates his own first chapter in arguing that managers and conservationists might ignore much of the book's emphasis on demography and instead focus on carrying capacity.

Perhaps, indeed, such a wide-ranging work is impossible to summarize fairly. Even so, a reader can ask general questions. Does the book contain original findings or new syntheses? Does it survey enough approaches to the subject so that interested readers will have wise guidance? Would the broad subject have been better managed by a single perceptive, or even idiosyncratic author? Certainly the first two questions can be answered affirmatively. However, multi-authored books, unless severely edited, inevitably contain redundancy, contradiction, and some weak sections. Several chapters needlessly spell out the truism that rate of change of populations is the product of rates of survival, birth, emigration and immigration. Several use graphical or sensitivity analyses to state that adult mortality in long-lived birds contributes the most variance to population change, which has been understood at least since Lamont Cole's (1954) review. Other chapters contradict Rowley and Russell's assertion that there is "preoccupation of northern temperate ornithologists with clutch size," while "important aspects of life history strategies tend to be ignored." Perhaps, also, a modicum of originality is suppressed when established and respected scientists are chosen to convey their work. It is instructive to compare this book with a recent symposium volume on *Population Biology of Passerines*, published in 1991 as NATO ASI Series G, Vol. 24. The NATO work has some overlap of authorship and editorship with the present work. However, it also includes more junior and less prominent authors. Although, compared to the book reviewed here it is less well edited and overly focused on titmice, the NATO volume does have more original argument and enlivening speculation.

Finally, a colleague with an interest in fisheries time-series has skimmed this book for parallels and offers an interesting suggestion. Could published tables and figures based on lengthy time series or wide surveys of the literature contribute more if the raw data were included on a diskette? For those with proprietary instincts, safeguards could be added: for example, no publication without permission, and perhaps agreements on authorships. Consider the creative work that might result from turning loose our successors on lifetimes of collected data!

Any research library with holdings on ecology or ornithology should have this book, and ornithologists immersed in population studies, or about to be, should purchase it.—IAN A. McLAREN, Biology Department, Dalhousie University, Halifax, NS, Canada B3H 4J1.