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Estimating Numbers of Terrestrial Birds: Edited by C. John Ralph and J. Michael Scott. 1981. Studies in Avian Biology. No. 6. x + 630 pp. Orders (payable to Cooper Ornithological Society) should be sent to Allen Press Inc., P.O. Box 368, Lawrence, Kansas 66044. \$20.00

This landmark publication contains the proceedings of a symposium held at Asilomar, California in October 1980. The list of authors reads like a "who's who" of bird enumeration throughout the world, from as close as other parts of California to as far as New Zealand and Finland. There are far too many papers in the book to even list them in a review (the table of contents alone fills 5 pp.). Thus, the following paragraphs merely summarize each session, with emphasis on papers pertaining directly to banding. Many non-banding papers will also be of interest to banders involved in active research on birds.

Because many of the papers are relevant to more than one topic, the table of contents is followed by a 3 pp. "reader's guide" to various topics, to be used in conjunction with the contents. As there is no index, this guide also serves as a mini-index. The book consists of a few introductory addresses, followed by papers that were grouped into 11 sessions, a summary of the symposium as a whole by John T. Emlen, 8 appendices, and a composite literature cited. Each session except the last includes a brief introduction by the chairman of the session, a series of papers on the topic under discussion, and two summaries of the papers in the session by prominent researchers in the field covered by the session.

The first 2 sessions include 14 papers on "estimating relative abundance," the first chaired by Joseph J. Hickey and the second by Robert D. Ohmart. Two papers in these sessions are of special interest to banders. In "surveying birds with mist nets," James R. Karr reviews the use and problems of using netting and banding in conjunction with other census methods in conducting avifaunal surveys of specified areas. David J.T. Hussell proposes a preliminary model in "the use of migration counts for monitoring bird population levels," based primarily on long-term banding and counting data at Long Point, Ontario. Other papers in this session are concerned with Christmas Bird Counts, indexing density, the North American Breeding Bird Survey, winter bird-population studies, indirect methods of estimating birds, and atlas projects. The authors of several papers

and summaries call for more banding in assessing the reliability of these techniques.

The 3rd session, chaired by David R. Anderson, consists of 7 papers on "estimating birds per unit area." As banding is basically a form of mark-recapture technique, 3 papers are obviously concerned with banding studies: "territory and home range of the Blackcap (*Sylvia atricapilla*) and some other passerines, assessed and compared by mapping and capture-recapture," by C. Ferry, B. Frochet, and Y. Leruth; "Remarks on the use of mark-recapture methodology in estimating the avian population size," by James D. Nichols, Barry R. Noon, S. Lynne Stokes, and James E. Hines; and "Mark-recapture — what next?" by G.M. Jolly. These papers review both the value of the mark-recapture technique, and also some of the problems associated with underlying assumptions in studies using this method. In another paper, "Sources of error involved in the Finnish line-transect method," Olavi Hilden uses banding data as a partial test of this commonly used census technique. Other papers in this session involve limitations of the mapping method, a comparison of variable-strip and fixed-width transect surveying methods, and methods of censusing land birds over large areas.

Chandler S. Robbins chaired the 4th session, "Comparison of methods," in which 8 papers compare census figures obtained through 2 or more methods. Banding can obviously play an important role in such studies, especially in areas where a large proportion of 1 or more species have been color-marked as part of a more intensive study. David F. DeSante of the Point Reyes Bird Observatory thus based his paper, "A field test of the variable circular-plot censusing technique in a California coastal scrub breeding bird community," on color-banded birds of 8 study species. Similarly, "An evaluation of breeding bird census techniques for the Long-billed Curlews (*Numenius americanus*)" by Roland L. Redman, Thomas K. Bicak, and Donald A. Jenni is based in part on color-banded, radio-fitted birds.

The next 3 sessions examine various factors which may alter census results. The 5th, chaired by Cameron B. Kepler, is on "Species variability," a topic best addressed by long-term studies on banded birds. Indeed, 3 of the 4 papers in this session concern banded birds, and Barbara Diehl, whose paper, "Bird populations consist of individuals differing in many respects," did not involve banded birds, stressed the preferability of

marking birds in such studies. Harold F. Mayfield bases his comments in large part on color-banded birds in "Problems in estimating population size through counts of singing males." Jan Ekman studied a color-banded population of Willow Tits to obtain data on "Problems of unequal observability," posed by the behavior of the birds themselves. In "Methods of detecting and counting raptors: a review," Mark R. Fuller and James A. Mosher conclude that trapping and banding are generally inefficient for counting raptors or estimating their numbers, but also stress the important role that banding can play in conjunction with other methods, especially during migration, and call for an increase in its use.

The 6th session, chaired by Harry F. Recher, consists of 11 papers on "Environmental influences," including diurnal and seasonal changes in both activity and detectability, environmental acoustics, effects of pesticide applications, and problems associated with vegetative structure and with rugged terrain. In "Effect of time of day on bird activity," Chandler S. Robbins compares breeding bird survey data with banding results, and he also includes banding data in an examination of "Bird activity levels related to weather."

10 papers constitute the 7th session, on "Observer variability," chaired by Ralph J. Raitt. These papers examine hearing ability, distance-estimating ability and count variability among observers, the influence such observer variation can have on the reliability of census results, and methods of reducing such biases. Chandler Robbins of the U.S. Bird Banding Laboratory, appropriately emphasizes the use of banding once again, this time in a paper co-authored with Richard W. Stallcup on "Problems in separating species with similar habits and vocalizations." Sheila Conant, Marks S. Collins and C. John Ralph used data collected on the behavior and territory size of color-banded Nihoa Millerbirds and Nihoa Finches to assess population estimates based on 3 different census techniques in "Effects of observers using different methods upon the total population estimates of two resident island birds."

The last 2 regular sessions concern sampling design and data analysis, and are thus in general more mathematically and model oriented than most of the papers in earlier sessions. While the mathematical aspects of some of these papers will pose an obstacle to many readers, they do contain basic principles well worth at least skimming. The session on sampling design, chaired

by Jared Verner, includes 10 papers considering such problems as optimizing frequency of samples, numbers of transects or plots, lengths of count periods, and distance from observer of allowable detections by sight and/or sound. Of particular interest to banders will be K.H. Pollock's paper, "Capture-recapture models: a review of current methods, assumptions and experimental design."

The session on data analysis, chaired by Fred L. Ramsey, consists of 8 papers assessing the validity of using various types of data analysis for various types of census or sampling data. A paper by Martin and Bette Erdelen, "The efficiency of the mapping method — a computer simulation based on field data," is based primarily on color-banded male Willow Warblers.

The text of the book concludes with 10 "overviews," exploring such topics as problems of scale of analysis, relating habitat variables to bird densities, the usefulness of censusing as compared with sampling measures of abundance, the use of censusing in insular biology studies, statistical principles, and adapting generalized instructions to specific situations. Raymond J. O'Connor found banding data to support conclusions reached through census techniques in "habitat correlates of bird distribution in British census plots." James R. Karr, in discussing "surveying birds in the tropics," considered mist nets, especially when combined with color-banding, as the best tool in overcoming some of the complex problems in censusing birds in tropical areas, although they do not randomly sample entire avifaunas. David G. Dawson calls for greater use of marked birds in confirming the reliability of sampling techniques in his comparison of results obtained through territory mapping with those obtained through various transect techniques in "the usefulness of absolute ('census') and relative ('sampling' or 'index') measures." The table of bird census problems and methods in John T. Emlen's summary of the entire symposium should be useful to readers swamped by the large number of papers, especially if used in conjunction with the "reader's guide."

The 8 appendices include definitions, several committee reports, a list of poster presentations, and a list of participants. The composite literature cited section constitutes a good partial bibliography of the literature on sampling bird populations.

As with any compilation of many papers, there is considerable variation in style and degree of complexity

among papers, but in general the quality is high, and the summaries at the end of each session contain critiques of the papers presented. Since the book contains several review papers and considerable new research, it will be a standard reference source on estimating bird numbers for many years, and it will likely stimulate even more research. On finding 2 typographical errors in the table of contents, I feared a sloppy proof-reading job, but found only 12 such errors in the remaining 630 pp. of text, and only the reference to figure 3 on p. 541 where figure 2 is intended, is of any consequence. I also expected some problems to arise out of the single, combined literature cited. However, a detailed check of the first and last main papers revealed no errors in the first, and only an ambiguity in the last. Erskine (as do many other authors) refers to John T. Emlen's much-cited 1971 Auk paper without using Emlen's initials, but the literature cited section also lists a paper by S.T. Emlen published in the same year. Similarly the reader has to choose between a, b, or c references in at least a few other places (Svensson 1978 on p. 101; David Dawson 1981 on p. 454; Ramsey and Scott 1981 on pp. 509 and 511), but in most cases one can guess the correct paper by the context. In general, one has the impression that the book follows the order of the symposium, but in a few places this is evidently not so. Ricklef's summary of the session on species variability makes several comments on a paper by Ralph in the next session. Frances James refers to Pollock's paper as the last of 5 in a session in which it is the 6th of 10 papers! And Erskine remarks on papers to be presented in a forthcoming session in his paper, the last in the book! These are only minor editing lapses in a book otherwise remarkably free of errors. My only real complaint with this volume concerns the binding — my review copy began to fall apart before I had reached the half-way point.

This rather lengthy review barely skims the contents of this important contribution to the techniques literature. Banders and others studying bird populations, especially terrestrial species, will find this a necessary shelf-mate to their favorite field guide, the banding manual, and Thomson's bird "dictionary." Editors Ralph and Scott deserve hearty congratulations in producing such an important work, so free of errors, and so soon (within one year) following the symposium on which it is based. At \$20.00, few books contain so much information for such a relatively low price.

Martin K. McNicholl

A.B.A. Checklist: Birds of Continental United States and Canada. Second Edition, 1982. The American Birding Association, Box 4335, Austin, TX 78765. Price, \$8.25 for ABA members, \$9.00 for non-members, plus \$2.25 postage & handling.

This is an up-to-date checklist of all birds recorded in continental United States and Canada through 1981. Perhaps its chief contribution to ornithology is in the section entitled "Summary of Records of Accidental and Other Species." Twenty-four pages are devoted to this complete listing, with references of all occurrences of accidental species in North America. The primary references for this information are *Audubon Field Notes* and *American Birds*. According to the ABA Checklist Committee Chairman, Stuart Keith, "this is the only publication in which all this information can be found."

Mickie Mutchler



Correction:

Part of a sentence omitted from McNicholl's review of Belcher's "Birds of Regina" (NABB 7:163, 1982) removed the logic of the next sentence. The fourth (second last) sentence of the second paragraph should read, "I have observed two races of both the Palm Warbler and the White-crowned Sparrow in southeastern Alberta, and observed only the western ("spotted") race of the towhee in Alberta and only the eastern (unspotted) race in Winnipeg."