

and down flapping vigorously when approached by an intruder. Some birds were easily captured while others ran at the last moment, but in general they did not revert to the effective running behavior characteristic of the pre-flight period. Chicks that had lost feathers sometimes ran from danger, but these may have been birds that had never flown successfully. Birds with fractured wings seldom ran from me when I approached. Even two weeks after young banded terns lost their ability to fly, some of them would again jump and flutter rather than run, although others seemed to "relearn" how to run from danger. The terns were much slower than the meadowlarks in adjusting to a flightless condition. The successful escape of the flightless *loyca* attests to the adaptive value of such quick behavioral adjustment, although in nature it is probably infrequent that an adult bird is rendered flightless yet survives. I am tempted to speculate that the difference in adjustment somehow reflects a more general difference between some non-passerine and passerine groups, or at least oscines. It may be that some species or higher categories have been selected for a general ability of the central nervous system to adjust to new situations. Alternatively, a crouch-and-hide strategy may be realized more easily in some avian taxa than in others. Adult meadowlarks are cryptically patterned on the back; they frequently rest crouched

beside vegetation against which they are well-camouflaged. This is less true for juvenile Common Terns and not at all true for adult terns. C. H. Blake (pers. comm.) suggests that adult Common Terns run less well than young birds because they have proportionately smaller feet and legs. Hence, juvenile terns, whose legs are growing in a negative allometric relation to body growth, may be less likely to revert to running than, for example, the meadowlarks.

I have used here the term "adjustment," rather than "adaptation." The latter has a particular meaning in ecology and evolution referring to attributes of species or populations, while "adjustment" is here used to refer to changes on the individual level which are relatively short-term. However, the ability to adjust is itself an adaptation, often referred to as "plasticity." In view of increasing interest in environmental changes, a systematic investigation of adjustment capacities among species, would be of interest.

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RECENT PUBLICATIONS

The California Quail.—A. Starker Leopold. 1978. University of California Press, Berkeley. 301 p. \$14.95. This book concerns the distribution, habitat relations, natural history, and management of the California Quail. Clearly written and crammed with information, it conveys an appreciation for the bird and its relationship with the land. Illustrated with many charts and attractive drawings by Gene M. Christman, and photographs (which suffer in reproduction). Three appendices treat quail in aboriginal California (by K. M. Nissen), foods of the species (by B. M. Browning), and effects of rainfall on breeding (by M. J. Erwin).

Granivorous birds in ecosystems.—Edited by Jan Pinowski and S. Charles Kendeigh. 1978. Cambridge University Press, New York. 452 p. \$41.00. Birds that eat weed seeds and grain are a component of man-made ecosystems, being associated with mankind's main food crops. This urgent problem became the subject of a multi-faceted investigation under the International Biological Program in 1966. The outcome of that project is this volume, a synthesis of articles by 12 contributors. The editors deserve much credit for organizing the work and for expertly integrating its parts. The chapters cover the evolution and distribution of granivorous birds, their genetics and population dynamics, biomass and production rates, energetics and food consumption, impact on ecosystems, control, and the ecological significance of granivory. Ten appendices tabulate abundant data on reproduction in *Passer* species and on metabolic rates in many avian species. Although the book is of primary importance to those who are

concerned with the biology and management of granivorous birds, its concepts and procedures are equally applicable to species with other food habits. Furthermore, it is a model of large-scale international collaboration in ornithology and the application of basic research to practical problems.

Breeding Birds of Elephant Butte Marsh.—Charles A. Hundertmark. 1978. New Mexico Ornithological Society Publication No. 5. 17 p. Paper. \$1.35. Available: Secretary, N.M.O.S., 223 Morningside Drive NE, Albuquerque, NM 87108. Elephant Butte Marsh is in the floodplain of the Rio Grande, south of Bosque del Apache National Wildlife Refuge, in southwestern New Mexico. It supports the largest rookery of nesting water birds in New Mexico, including three species not known to nest elsewhere in the state. This pamphlet reports the status of 94 species of birds (64 nesting) seen there during six summers of field work.

Revised Check-list of the Birds of New Mexico.—John P. Hubbard. 1978. New Mexico Ornithological Society Publication No. 6. 110 p. Paper. \$2.50. Available: as above. This check-list incorporates new information on New Mexico birds since Hubbard's 1970 list was published. The species accounts concisely give frequency of occurrence, status, range, numbers, habitats and elevations. Bibliography and index of place names used in text. In view of the size of the state and the relatively small number of its people who study birds, it is impressive that its large (476 species) avifauna is known as well as it is.

Fifty Common Birds of Oklahoma and the Southern Great Plains.—George Miksch Sutton. 1978. University of Oklahoma Press, Norman. 113 p. \$7.95. Of the more than 400 species of birds that occur in Oklahoma, Sutton has chosen to present fifty, although that limit is not explained. A color plate and a facing page of text are devoted to each species. Written in an engaging style, the accounts are informative yet enlivened by personal anecdotes. The paintings were made over a span of many years. Several of them were first published in W. E. Clyde Todd's *Birds of Western Pennsylvania* or an early edition of *The World Book Encyclopedia*. They vary not only in technique but also in the quality of their reproduction. This little book will appeal to Oklahoma birders and to admirers of Dr. Sutton's art.

A Partial Bibliography on Rare and Endangered Species.—Noel J. Cutright and Douglas P. Kibbe. 1978. Vermont Institute of Natural Science Publication No. 5. 15 p. Pamphlet. \$3.00. Available: Vermont Institute of Natural Science, Woodstock, VT 05091. This bibliography concentrates on publications that list rare and endangered species of plants or animals. References are listed according to their scope: general, state and regional, national, or international. Most of the references date from the past decade. A useful publication, though its message is discouraging.

Handbook of the Birds of Europe, the Middle East, and North Africa/The Birds of the Western Palearctic. Volume 1. Ostrich to Ducks.—Edited by Stanley Cramp, with K. E. L. Simmons, I. J. Ferguson-Lees, Robert Gillmor, P. A. D. Hollom, Robert Hudson, E. M. Nicholson, M. A. Ogilvie, P. J. S. Olney, K. H. Voous, and Jan Wattel. 1977. Oxford University Press, London and New York. 722 p. \$55.00. This volume, the first of a projected series of seven, is the successor to *The Handbook of British Birds* (Witherby et al. 1938–41). Just as that work set a new standard for its time, so does this. It is a wholly new encyclopedia, encompassing not only new information but also wider zoogeographic scope—hence, more kinds of birds. The sequence and nomenclature of taxa are also different than before, now following lists by Voous (1973. Ibis 115:612–638). The Introduction explains at length the organization and terms employed in the body of the book; its section on the analysis of voice is an admirable primer on that subject. The 122 species accounts in this volume, each averaging about six pages of text, are remarkably comprehensive and lavishly illustrated. The book itself is attractively designed and well-made. It would be difficult to over-praise this work or to fully show its scholarship and contents. A landmark in ornithology, like its predecessor, this series can likewise be expected to stimulate many advances in research.

Parental Behavior in Birds.—Edited by Rae Silver. 1977. Benchmark Papers in Animal Behavior. Vol. 11. Dowden, Hutchinson & Ross, Inc., Stroudsburg, PA. 435 p. \$24.50. This is a collection of 32 important articles on parental behavior, the earliest dating from 1887. They are arranged in the following categories:

the start of breeding, pair-formation and nest building, egg laying, post-laying behavior, and post-hatching behavior. A table gives cross references to these papers and related ones in other Benchmark volumes. The editor's introduction to each section ties the papers together and alludes to pertinent others. A useful book for teachers and students of avian behavior.

Prairie Ducks/A Study of their Behavior, Ecology and Management.—Lyle K. Sowls. 1978. University of Nebraska Press, Lincoln. 193 p. Paper cover. \$3.50 (Cloth \$11.50). A new printing of a book originally published in 1955. It is a report primarily on the homing and nesting behavior of five species of dabbling ducks. The results of five seasons of careful field work in the Delta Marsh of Manitoba are presented in a well-written account. In spite of its age, this book is still of value to waterfowl biologists and responsible hunters.

The first ten years of the co-operative Breeding Bird Survey in Canada.—Anthony J. Erskine. 1978. Canadian Wildlife Service Report Series No. 42. 59 p. Paper cover. Canada \$3.75, other countries \$4.50. Available: Printing and Publishing, Supply and Services Canada, Ottawa, Canada K1A 0S9. The BBS was developed in the United States in 1964–65, and started in Canada in 1966. This report presents its findings of year-to-year changes and long-run trends, and indicates their correlations with weather, the use of pesticides, or other environmental conditions. The operation of the BBS itself is examined.

Colorado Bird Distribution Latilong Study.—Edited by Hugh E. Kingery and Walter D. Gaul. 1978. The Colorado Field Ornithologists (in cooperation with The Colorado Division of Wildlife). 61 p. Paper. \$2.00. Available: CFO Treasurer, 5325 Garland, Arvada, CO 80002. Colorado lends itself readily to the latilong plotting system developed by Skaar for Montana. Using that method, this report synthesizes records on species of birds that have been found in the state within the past 15 years. For each species, a latilong diagram shows distribution and status, while additional symbols show habitat and abundance by season. A great deal of information is thus presented in a small space. The only recent document on the status of birds in Colorado, this will be invaluable to ornithologists working there.

Avian Breeding Cycles.—R. K. Murton and N. J. Westwood. 1977. 594 p. Clarendon Press, Oxford. This book presents an advanced-level multidisciplinary approach to the physiology and ecology of avian reproduction. It considers the relevant organs and hormones, energy budgets, breeding cycles, circadian rhythms, photoperiodism, sexual selection, and the regulation of populations. That these subjects are so well integrated is due to the fact that the book is not an edited collection of papers, but was written as a whole. Photographs, photomicrographs, charts and diagrams. This authoritative and comprehensive work should be seen by serious students of breeding biology.

