

## BOOK REVIEWS

*The Ruffed Grouse. Life History. Propagation. Management.* by GARDINER BUMP, ROBERT W. DARROW, FRANK C. EDMINSTER, and WALTER F. CRISSEY. (New York Conservation Department, Albany, 1947.) xxxvi plus 915 pp., 4 color plates, 442 illustrations. \$10.00.

This monographic treatment of the Ruffed Grouse, with particular reference to *Bonasa umbellus umbellus* as found in New York, richly deserves the award of the Wildlife Society for the best publication in the wildlife field for 1947. This publication reports upon a 13-year investigation of a single species, in all of its aspects, by a host of professional wildlife workers. It is doubted if any single wild avian species has before received such concentrated attention in North America, or elsewhere in the world. The results presented in this publication represent the largest investment ever made in the investigation of a single species of game animal. To carry out an investigation of such magnitude, with so many investigators requires an unimaginable amount of administrative perseverance and ability; it is questionable if a work of such scope will again be attempted for many, many years.

Surely, as Conservation Commissioner Perry B. Duryea states (p. vii), this report graphically points out the rapid strides which have been made in the scientific approach to the management of our wildlife resources in recent years. In addition to Bump, Darrow, Edminster and Crissey, the following individuals are listed authors for one or more sections or chapters: David E. Davis, Fred Everett, S. C. Fordham, Frans C. Goble, Earl R. Holm, John C. Jones, W. Mason Lawrence, Phillip P. Levine, William H. Long, M. E. Phillips, A. L. Romanoff, J. Victor Skiff and John E. Trainer. The color plates are from the able brush of Fred Everett and the sketches are from the pencils of Fred Everett and Clayton B. Seagers. Evidence of careful organization and editing of the entire book is abundant, including diligent cross referencing by footnotes.

The book is divided into four main sections: I—The Ruffed Grouse—Its Background, Basic Biology and Economic Importance (105 pages); II—The Factors that Affect Abundance (476 pages); III—Managing the Grouse Crop (112 pages) and IV—Appendix (192 pages). The space devoted to each of the sections is of interest in indicating the principal emphasis. It is evident that the Investigation devoted a majority of its attention to factors that affect the abundance of this species.

Bump's opening chapter on the history of the grouse gives attention to the fact that the wide variations in the abundance of this bird from year to year were recorded more than a century ago, but they were not recognized as being of a cyclic nature at that time. The periods of scarcity were blamed upon various factors, as many as thirty-six having been listed. These periods of scarcity—which are now recognized as being of a cyclic nature—resulted in directing attention to the species, first in endeavors to propagate it artificially and, beginning in 1929, with the inauguration of the New York grouse investigation. Thus, the history of the grouse is similar to that of many of our other game species; great abundance in colonial times with decreasing numbers as settlement advanced. The pronounced cycles of abundance and scarcity set this species in a category which directed attention to it somewhat earlier than to many other sporting species. So, later historians of the grouse may decree that the cycles of the grouse, although greatly complicating its management, have benefited the species in that it has directed to it some of the most concerted scientific attention received by any form of wildlife. In this manner, grouse cycles and grouse history may finally work together to the best advantage of the grouse which must live under present day conditions—to be utilized wisely or unwisely by man in the habitat which he assigns to it.

Ornithologists who are professionally concerned with our game species often are accused

by sportsmen of being impractical because of their biological approach to the problems confronting them. Chapter II gives the biology, and scientific background, of the grouse and points out in many places the practical value—if not absolute necessity—of such information for the proper management of the grouse. Two examples may suffice; first, Fred Everett's close scrutiny of several hundred specimens of known sex in captivity and in the wild made it possible for him to point out a number of general characters which may be used in separating the sexes and, second, Bump's discussion of the psychology of the grouse lead him to conclude (p. 65) that the existence of a strong dominance complex among grouse, particularly among the males, may be a very important factor which limits the number of grouse that occupy any given habitat. Field usage of the information given by Everett and Bump is at once apparent to the game manager. What has been said of the practical value of the discussions by Everett and Bump applies equally as well to the Chapter II summary of the physiology, pteryology, embryology, growth and development, weights, measurements and related data. Field and experimental data which are summarized in Chapter II are presented in more detail in the appendix.

For the first time known to this reviewer, the cover requirements and the preferences for various cover types at the several seasons of the year are treated adequately for an American game species. In chapter III the results of more than 16,000 man-days afield gathering data on some 19,619 grouse flushes, 1,515 grouse broods and 1,270 nests are analyzed statistically in arriving at conclusions regarding the cover and shelter requirements of this species. Conclusions drawn from such a mass of data leave little room for argument even though these conclusions bear out some popular thoughts on these questions and run counter to other. Adequate investigation of the cover requirements of grouse of various ages and at various seasons of the year was made by the Grouse Investigation. The adaptability of the grouse to a wide variety of cover and food conditions makes it difficult to summarize with definite statements its requirements for cover, food and shelter but the treatment of these questions has been handled admirably by Bump from the mass of data at his disposal.

Ornithologists will be particularly interested in the discussions (pp. 237-241) relating to the chemical composition of some of the various foods taken by the grouse. The requirement of young grouse for a diet with a protein content of 27%, whereas the adults require only a 20% protein food, is of interest in that such protein levels are higher than for most domestic poultry to which many of our game birds often are likened. Chapter III presents data on the analysis of some 1,633 crops of grouse in which were found more than 414 species of plants and 580 different animals remains. One important fact brought out by these workers is that the grouse takes such a wide variety of both animal and plant foods, a large portion of which consists of buds, that it is usually needless for the wildlife manager to concern himself, except in very rare instances, with food production for the grouse by means of artificial plantings or artificial feeding.

Darrow's summarization of the general characteristics of the grouse, or life history, is excellently done. This analysis includes a review of the literature and a summarization of the findings of the investigation on the subject, including several very controversial matters, such as "crazy flights", the manner in which the characteristic sound heard in drumming is produced, flocking characteristics and other pertinent habits. The interpretation of the life history data is made conclusive by the opportunity which the investigators had of checking and rechecking their observations, using the grouse raised at the New York Research Center as observational specimens as well as the very extensive field data on native grouse collected by numerous field workers during the course of the 13 year Investigation. Crissey's discussion of the influence of weather upon the grouse is very thought provoking. One of the outstanding facts brought out by this discussion is that weather conditions account for but few direct losses in the grouse population. There was some relationship shown between weather condi-

tions and periods of grouse scarcity (p. 305), but there is no evidence presented which would show that weather conditions are directly responsible for the grouse cycles of scarcity.

Predation is a controversial subject. Those who would discuss this question, would do well to review the sane discussion of this matter as given by Darrow (Chapter VII). His presentation of the theory of predation and predation control, followed by a detailed discussion of each of the large list of species known to have preyed upon the grouse at one time or another, should be read by every sportsman, game management biologist, legislator and avid protectionist. If this were done, more logic and less sentiment would be evidenced when dealing with this perennial problem in ornithology. The Grouse Investigation produced no evidence which would indicate that efforts to control completely grouse predators have resulted in a permanent increase in the numbers of grouse found on any given area (p. 350).

Seldom has it been possible to assemble sufficient data on the reproductive capacity of any wild animal to permit an intelligent evaluation of the potentialities of any given species. Edminster and Crissey had at their disposal a wealth of information on the reproductive capacity of the grouse which far exceeds that available on most other American avian species. From the data available to them (pp. 353-368), they concluded that occasionally up to 25% of the female grouse may fail to breed in some years; reneating is seldom attempted unless the first nest is destroyed during the egg laying or early incubation periods; the average life expectancy in grouse probably is about 3 years; the sex ratios vary with age and with the seasons, but seldom interfere with the breeding of the grouse; egg infertility averaged 2.6% but rose to an average of 4.3% for reneating attempts; embryo mortality was low, being only 1.9% of the fertile eggs in first nests and 3.9% in reneating attempts, and, finally, inbreeding probably does not occur to any great extent and when it does, exerts no detrimental influence on New York grouse.

The relationship of man to grouse has been roundly discussed. His place as a decimator of the species, by hunting, has been determined by the Grouse Investigation to account for about 17% of the pre-hunting season grouse population (p. 378). Further, little evidence was uncovered by the Investigation which would indicate that the hunter exerts any appreciable depressing influence by his harvest upon the grouse population (p. 380) and may at times even by his hunting "... reduce the opportunity for the agents causing periodic scarcities to become effective." As a killer of grouse predators, man's place as a grouse benefactor is questionable as is the position of the fur trapper in reducing fur bearing grouse predators. By cutting timber, cultivating the soil, rearing cattle and in many other ways man has both benefited and destroyed the grouse. Unquestionably, the future welfare of the species rests in the hands of man, more as a manipulator of the habitat than as a hunter, according to Edminster.

Levine and Goble (Chapter X) report upon parasitism and disease basing their conclusions on autopsies of some 1,119 chicks and 1,728 adults from 50 of the 55 counties outside of New York City and Long Island. In this work, which has extended over 11 years, they encountered a number of animal parasites and diseases in the grouse which they examined, but none of them could be assigned the name of "the grouse disease" so common in popular literature and discussions. No evidence was found which would indicate that parasitism or disease has resulted in the periodic fluctuations in grouse abundance. The stomach worm, *Dispharynx spiralis*, was found to be the most pathogenic parasite of wild grouse in certain sections of the Northeast. The distribution of this worm apparently does not extend into all sections of the range of the grouse, however, as other investigators have not found it in grouse specimens examined by them (p. 422). It is of interest to note that neither the blood parasite *Leucocytozoon bonasae*, which has been reported from Ontario and Michigan, nor several other reported grouse blood parasites were encountered in the New York investigations. *Dispharynx* appears to have caused the death of most of the grouse found dead in the field in the course of the Investigation.

Artificial propagation, in years past, has been suggested as the panacea for our difficulties in producing an inexhaustible supply of wildlife for the hunting public. In the early work with the grouse (Chapter I) artificial propagation of the grouse was attempted by many individuals and such endeavors met with almost complete failure. Bump (Chapter XI) details the systematic evolution of methods which finally resulted in overcoming the difficulties encountered by early grouse raisers. Certain difficulties, principally biological in nature, prevent the artificial production of grouse in the quantities which have been attained with quail and pheasants. Bump is careful to point out in this discussion that the artificial production of grouse, either to restock depleted coverts or to provide birds for the gun, is seldom justified, except in very rare instances. Even further advances in the mass production of grouse in captivity are unlikely to enhance greatly the value of artificial propagation of grouse as a practical wildlife management tool.

Any individual whose activities have been concerned with determining and evaluating animal populations over a period of years will be impressed with the amount of data skillfully presented by Darrow in his discussion of the factors affecting productivity and fluctuations in abundance of the grouse populations (Chapters XII and XIII). Perhaps more detailed data are presented in these two chapters on the fluctuations for the entire year, rather than for spring and fall populations only as is more often the case, than is available for any other species of bird known to this reviewer. Darrow's discussion, based on these data, of such subjects as saturation density, life equation and carrying capacity of various types of habitat is well presented. It probably represents the most complete presentation of these subjects from a factual base which has appeared in literature up to this time. Of course, the subject of cycles is discussed, but he makes no attempt to designate a single factor, or combination of factors, which may account for this phenomenon. The records presented definitely establish the fact that grouse have a more or less periodic fluctuation of abundance within a period of slightly more than 9 years. Such fluctuations do not appear to be precisely synchronized throughout the entire range of the grouse in North America nor do they exhibit this character completely even in one single state.

Part III, which deals entirely with the management of the grouse, will be of major interest to the practicing wildlife manager. In this section, Bump and Edminster have given in detail those factors which must be considered in preparing and executing a management program designed to benefit the grouse. This section of this book will be well thumbed by the wild land administrator, students of wildlife management at our colleges and universities and by the practicing game manager in the field.

The appendix, which covers almost 200 pages will be of value to ornithologists and to professional biologists as well. Detailed discussions of some of the more advanced techniques, the anatomy and pterylography of the grouse, the results of physiological studies of the grouse, grouse foods, forest-wildlife management data and various tables presenting data summarized in the text are given in the appendix. This appendix presents data which are relatively new to the field of wildlife management such as Davis' excellent presentation of the anatomy of the grouse and Long's discussion of the physiology and its relation to the management of this species.

It is no platitude to state that this publication has set a new high for the field of ornithology. True, the information given in it is treated in such detail that casual reading may indicate that it is unduly wordy; close reading will quickly dispel this thought. The completeness with which the subjects are treated and the thoroughness with which they are presented, of necessity, make the cost of this book slightly high for those individuals who would and should make the best use of the data presented. However, the intrinsic value of the publication will more than compensate for the original cost of this book; it is a fine reference tool well worth the cost. It will appear, sooner or later, on the bookshelves of a majority of the ornithologists and conservationists and in the library of many of our sportsmen and biologists. It is a striking ex-

ample of the practical application of ornithological observations and reflects the results of work on many other kinds of birds.

HENRY S. MOSBY

*Birds' Nests: A Field Guide.* By RICHARD HEADSTROM. (Ives Washburn: New York: 1949.) 128 pp., 61 photos. \$2.75.

In winter woods old bird nests are conspicuous objects sure to catch the eye and arouse curiosity as to their makers. While many ornithologists are not likely to be impressed by the importance of identifying such nests, most have probably been the target of queries concerning them at one time or another and certainly teachers and scout leaders are aware of the problem. To aid in satisfying curiosity about nests unattended by birds, this book, covering the United States east of the 100th meridian, has been produced. With it the person of limited field experience may arrive at some reasonable guess concerning the identity of an unknown nest.

Mr. Headstrom's book is essentially a key with the table of contents serving as an outline of the system. The categories are based largely on location and general form, partly on size and other considerations. As is inevitable, some parts are more definite than others; in one place 18 birds come under the same heading. Brief paragraphs help somewhat to distinguish birds grouped under a single heading, though distinctions often seem to be more a matter of vocabulary than of essential meaning. By entering the same bird in more than one place species with variable habits are adequately treated. No scientific names are given, but there is a brief statement on the breeding range of each species. The photographs, well reproduced and grouped at the back of the book in the order of the key, show a variety of nests, mostly with eggs.

HAVEN KOLB

*London's Birds.* By R. S. R. FITTER. (Collins: London, 1949) 256 pages, 23 illus., 2 maps. 10s. 6d.

Ornithologists have ignored the study of birds in urban habitats for the obvious reason that bird students basically are students of the fields and forests. This book, however, calls attention to the possibilities of obtaining both pleasure and ornithological information by the study of city birds. The birds of the city are described by ecological habitats: buildings, ground, trees and shrubs, marshes, the Thames, and the air.

Of the birds nesting on buildings the Rock Dove receives most attention. The swallow, house martin, and swift nested formerly in many parts of London but now are rare or absent. The explanations for the decline reveal some fascinating environmental relationships. A rapidly increasing species is the Black Redstart which invaded London before the war and utilized the nesting sites provided by the "blitz". Other species such as Wren, Robin, Pied Wagtail, and 3 kinds of tits nest on buildings or other man-made structures. The chapter on roosting contains detailed descriptions of the behavior of the Starlings, a subject sadly neglected in the United States.

Observations of migrations have been very profitable and have shown that many species migrate over the city in large numbers. Other species may be winter or summer residents. The role of predators, especially cats, rats, and gray squirrels, in destroying birds is mentioned. The book concludes with a discussion of man as an enemy and as a friend. A bibliography, list of species, and a detailed index make the textual matter readily available.

This book deserves great praise for its novel viewpoint and its splendid execution. Such a book could not be written for an American city because our ornithologists have neglected the fascinating opportunities. Perhaps this book will stimulate some observers to collect notes on urban ornithology.

DAVID E. DAVIS

*Hawks Aloft—The Story of Hawk Mountain.* by MAURICE BROWN. (Dodd, Mead Co. 1949) 222 pages, 11 illus. \$4.00.

*Hawks Aloft* is the story of the Great Hawk Slaughter on Hawk Mt., and then of the building on these former shooting stands of the world's first hawk sanctuary. It is a must for all ornithologists and for all conservationists. The story—and many a story within the story—is well told and well-written. Here is a good book—a modern bird classic. It will widen the interests and broaden the outlook of the mere bird-lister. Out of the pure ornithologist it will, or at least should, make a conservationist. Of the general reader it may, or may not, make a bird zealot; but it will at least make a zealot for visiting Hawk Mountain.

In 1932 the cries of dying hawks and wounded decoys still shivered the stillness of the oak-girt cliffs. But in 1934 these same rocks were already echoing the tread of the world's first hawk warden. Shooting was stopped. By 1937 excursion trains for bird watchers—not hunters—were running from Philadelphia to Hawk Mountain for the migration. By the 1940's pictorial automobile road maps showed Hawk Mountain Sanctuary as one of the sights of Pennsylvania. Watchers on the promontory had already included visitors from the Antipodes and Japan.

This achievement is due to Rosalie Edge and to Maurice Brown. Mrs. Edge, unaided by the older orthodox conservation societies, and unfettered by lack of precedent, had plunged ahead. Her vision was to stop the killing, to save the hawks. She took an option on the mountain top, raised money and engaged Brown as curator and warden. Two years later she brought the mountain top outright and set up the Hawk Mountain Sanctuary Association.

Maurice Brown had to be as much a public relations expert as an ornithologist or warden. He braved attacks by drunken hunters and by sober local citizens. He talked softly but firmly. He explained how hawks helped, not hurt, the farmer. And he patrolled the property and protected the hawks. In two years he had converted most of the local gentry. In ten he had made Hawk Mountain known by reputation to every bird lover in North America. Now *Hawks Aloft* brings this conservation success story to the general public.

Within five weeks of its publication last September unprecedented crowds were already parking their cars along the lonely road over the mountain. Thousands of new visitors were thronging the steep trail to the summit. A friend estimated he saw \$15,000 worth of field glasses on the promontory at one time on an October Sunday.

This is well. For much education is needed. One promontory saved is good. But other jutting outcraggs remain unprotected in Pennsylvania, New York, Virginia and elsewhere. Brown tells about these, too. On them the slaughter goes on. And it will go on until all hawks are protected by law, and by public opinion.

Enlightenment of this public opinion is the job Brown designed for *Hawks Aloft*. It does its job well. Buy it. Read it. Give it to a friend.

HENRY H. COLLINS, JR.