

LITERATURE

COMMENTS ON RECENT LITERATURE

Subspeciation in Song Sparrows. Similar species having more or less dissimilar ecological requirements frequently occur together, suggesting that they evolved side by side through a process of ecological divergence. Yet with rare exceptions, incipient species (subspecies) of a given species are not found together during the breeding season. Indeed, no very plausible genetic theory as to how a freely interbreeding, localized population could break up into races, and eventually species, has been advanced. In a review of this problem Mayr (1947) concluded that although all subspecies probably differ to some extent ecologically, geographical isolation is necessary for their evolution. Once reproductive isolation is achieved, similar species may acquire overlapping ranges. Competition between them then becomes a potent factor in promoting further ecological divergence.

Many birds once believed to be examples of ecological speciation, such as various Galapagos finches, are now thought to have passed through the usual initial stage of spatial isolation. Another group that suggests the control of speciation by ecological factors, possibly without geographic isolation, is the series of races of the Song Sparrow, *Passerella (Melospiza) melodia*, found near San Francisco Bay, some in salt or brackish marches, others in the uplands. Thus Huxley (1942: 272) referred to them as "a case of ecotopic subspeciation in birds where the two forms are kept separate by their ecological preferences." A much needed, thorough study of these birds has now been accomplished by Marshall (1948). He personally collected more than 800 specimens during the course of his intensive field studies. These and many others were compared and measured and the stomach contents, along with other ecologically significant data, recorded.

Four races of Song Sparrows are involved. Three, *samuelis*, *pusillula*, and *maxillaris*, are found, respectively in large salt or brackish marshes north, south, and east of the Bay. The fourth, *gouldii*, is found in adjacent suitable habitats around the Bay and merges with other mainland races to the north and south. ". . . The dense bay marsh populations are separated from each other by open water or by ranges of hills jutting into the bay and are separated from upland populations by the width of the arid bayside plain" (Marshall, p. 208). Narrow connecting avenues of Song Sparrow habitat do exist between the ranges of these subspecies where, with one exception mentioned below, complete interbreeding and intergradation occur in the bird populations.

These groups of Song Sparrows thus do not differ from ordinary geographic subspecies as respects isolation but their ranges are unusually small for conti-

mental subspecies. The sedentary habits of this abundant, resident species apparently provide sufficient isolation for this subspeciation. Even in Ohio, where many of the Song Sparrows migrate, the banding records of Mrs. Nice as interpreted by Miller (1947) indicate that most Song Sparrows settle within 300 yards of their birthplace.

The second unusual feature of these races of the Song Sparrow is the ecological diversity of the areas they inhabit. Miller (1942) had already suggested that the large number of subspecies found in the Song Sparrow as compared with, for example, the congeneric Lincoln's Sparrow, *P. lincolni*, is a result of the greater ecological tolerance of the former. The Song Sparrow is able to colonize diverse habitats; its sedentary habits then permit the evolution of races adapted to them. The habitats occupied by the Song Sparrow all possess certain characteristics vital to this species such as available water, plenty of light, plenty of vegetation within certain limits as to density, and area suitable for ground foraging. Wherever these conditions are met the Song Sparrow is at home. Thus where small areas of salt marsh are surrounded by upland habitat, the population is continuous and no racial variation is found. Along the marsh edges individual birds may feed daily on the seeds of both marsh and upland plants.

Although the individual Song Sparrow, if transplanted, would as a rule be "at home" in any of these habitats, nevertheless the racial characters of the salt marsh subspecies are presumably adaptive responses to local conditions. Where two races meet and intergrade neither is swamped out in its own habitat. Intergradation is most pronounced in the zone where the habitats themselves are intergrading. Natural selection apparently preserves the racial characters.

These rather isolated subspecies may be expected to have non-adaptive as well as adaptive genetic differences. Miller (1947) has pointed out that even in continuous populations of such a sedentary species local fixation of neutral genetic characters might occur by chance in accordance with the so-called "Sewall Wright effect." This would happen even more readily in small, isolated populations. Marshall, however, with one exception, finds the characters of the smaller or intermediate populations to vary in a gradual, predictable manner that suggests adaptive clines. His final conclusion is: "To my mind, the pronounced geographic variation shown in local Song Sparrows is but another example of this nicety of adjustment of the species to its local environments; nowhere do we find a suggestion of the gross differences in habitat preference or the qualitative differences in foraging, song and mating behavior, nor the overlap in distributions which differentiate Song Sparrows from Lincoln Sparrows and Fox Sparrows, the congeners of *Passerella melodia*" (p. 254).

It is, of course, unlikely that these Bay races of Song Sparrow will persist long enough and in sufficient isolation to become distinct species. Yet I believe that Marshall's attempt sharply to contrast their racial characters with species characters is contrary to what must normally occur in speciation and may be

occurring here. The latter suggestion is prompted by Marshall's analysis of the birds of a habitat, since destroyed, on San Francisquito Creek where the upland-willow and salt marsh habitats (and subspecies) met sharply without the usual slow transition. A series of Song Sparrows collected there about the turn of the century by Grinnell shows little hybridization, much less than would be expected if the 2 subspecies had interbred as freely as their proximity permitted. Grinnell (1901), who, incidentally, first realized the importance of these Song Sparrows as material for the study of evolution, concluded, I believe correctly, that at this point the 2 subspecies were behaving like incipient species. In races possessing adaptive modifications to rather different habitats and incipient (at least) preference for these habitats, sufficient time and isolation might well lead to speciation and the eventual acquisition of characters and behavior patterns as "qualitatively" distinct as those of such species as the Swamp Sparrow or the Seaside Sparrow.

GRINNELL, JOSEPH

1901 The Santa Cruz song sparrow, with notes on the salt marsh song sparrow. *Condor*, **3**: 92-93.

HUXLEY, JULIAN

1942 Evolution, the modern synthesis. Harper: London and New York.

MARSHALL, JOE T., JR.

1948 Ecologic races of song sparrows in the San Francisco Bay region. *Condor*, **50**: 193-215; 233-256.

MAYR, ERNST

1947 Ecological factors in speciation. *Evolution*, **1**: 263-288.

MILLER, ALDEN H.

1942 Habitat selection among higher vertebrates and its relation to intra-specific variation. *Amer. Nat.*, **76**: 25-35.

1947 Panmixia and population size with reference to birds. *Evolution*, **1**: 186-190.

DEAN AMADON

These comments are intended to review recent and somewhat unavailable papers covering several aspects of ornithology during the year. Your editor will appreciate remarks from Club members concerning this method of literature review.

EDITOR

BOOK REVIEWS

Birds Over America. By ROGER TORY PETERSON. Dodd, Mead and Company, New York, 1948: 7 x 10 in., XVI + 342 pp., 80 plates and one end-paper photograph. \$6.00.

Better than any other book I know, this one conveys the spirit of the enthusiast in the sport of bird study. Its pages are filled with the "shop talk" of the field ornithologist—query, speculation, anecdote of the kind we hear wherever members of the clan gather: Where is

the Bachman's Warbler? How many birds are there in America? Which bird is the most common? What are the prospects for survival of the Ivory-billed Woodpecker? Why is the Peregrine the favorite bird of so many people? What happens to birds in a hurricane? Where are the best places to see birds? What are the attractions (ornithological) of Maine, Cape May, Santee delta, Everglades, Dry Tortugas, Louisiana swamp, Texas coastal plain, Arizona desert, California waters, Utah marshes?

These and scores of other questions receive thoughtful comment in the twenty-five chapters of this book. Through them we gain a new appreciation of the years of vigorous field work, the keen eye, and the precise mind which made possible the famous "Field Guides."

Outsiders may view somewhat quizzically such single-minded preoccupation with avian affairs. Some readers may be disappointed that they do not see more of Peterson's own personality in this book, or that they do not become better acquainted with the other men who appear briefly in it. Probably few will read it as literature, although it has many eloquent passages. And we may all wish that a more colorful and distinctive title had been chosen. But, in total, this work will need no defense before those thousands of people who share Peterson's own enthusiasm for the living bird.

It will be a surprise to most of Peterson's readers to find that this fine artist is such a skilled photographer. The proof is provided in 107 splendid pictures selected from among thousands in his collection. Everyone will have his own favorite, but the three views of the young bald eagle I consider as dramatic as any bird pictures I have seen. Thoughtfully, Peterson has appended a two-page "Photographic Postscript," offering information about his methods and equipment.

An index has been provided, and it is particularly helpful in a book of this kind which touches upon such a diversity of subjects in such an informal manner.

HAROLD MAYFIELD

British Birds. By WILFRED WILLETT. Illustrated by 16 color plates and 44 drawings by Roland Green. A. and C. Black, London, 1948: 9 x 6 in., vii + 196 pp. \$2.50 (Macmillan).

This book is written to introduce the adult beginner to 200 of the commonest birds of the British Isles. The introduction gives elementary hints about bird study, such as where and when to look for birds, and what characters are important in field identification; no scientific names appear in the book. Each of the 27 chapters discusses a group of closely related or associated species, giving pointers for identification and prominent aspects of life history of each. Chapter headings list the names, total lengths, and usual habitats of both land and water birds. The style is simple and straightforward, and considerable information is presented. The color plates are fair, and certainly useful; the black and white drawings less so. Six scattered pages of the review copy were inadvertently left blank. While this volume will be useful to Britishers who wish to learn something about their common birds, most Americans who are sufficiently interested to undertake a study of British birds will want a more advanced book.

HUSTACE H. POOR

Flight Into Sunshine, Bird Experiences in Florida. By HELEN G. CRUICKSHANK. Photographs by Allan D. Cruickshank. The Macmillan Company, New York: 1948. 132 text pages, 121 photographs in black and white.

The vogue for naturalists' wives to write of their husbands' activities continues to gain momentum. While the composition of such biographies may be an excellent means for keeping the wives occupied and contented, one wonders what the reason can be for this sudden wealth of second hand books. The answer is probably to be found in the curious

fact that the public will buy almost any nature book, and the publishers will therefore accept almost any nature manuscript. After some pioneer discovered that here was a convenient way to make a few dollars, the deluge was on.

The reviewer's complaint is not so much about these books themselves as about other books that appear to be suppressed by them. The husbands, feeling themselves relieved of the responsibilities of authorship, joyfully pursue their calling with scarcely a thought of pencil or pen. Gone are the compelling accounts of nature experiences that sprang from the perceptions and reflections of the naturalists themselves. Yet who can more vividly describe a wildlife phenomenon than the chief observer? Who would dare to compare these current books with the field accounts left to us by Audubon, Townsend, Hudson, Coues, Chapman, Stone or any other of our lately extinct giants?

The foregoing comments are not aimed in particular at "Flight into Sunshine" by Mrs. Cruickshank. In fact the author is to be commended, within the category of books being considered, for her attempts at lucidity and brevity—if not at self-effacement. However the book shares with its fellows a general shallowness that is born of its very essence as the virtual image of another's work. It is reasonably well written, and the subject matter automatically makes it interesting. Due emphasis is placed repeatedly on the subject of conservation; the rôle played by the National Audubon Society in protecting wildlife is high-lighted in satisfying degree.

Twelve chapters conduct the reader from one Florida rookery to another, most of them in the Okeechobee-Everglades region. Pelicans; various herons and egrets; vultures; Florida cranes; wood, glossy and white ibises; and anhingas all obligingly allow themselves to be photographed.

The illustrations at the back of the book are a superb collection of bird photographs. Possibly the most remarkable, Figure 20, shows a brown pelican in flight with its pouch distended. One wishes that a more expensive paper had been used for the reproductions, so that a hard glossy finish could have been obtained. Much fine detail is lost in the present form of the illustrations.

"Flight into Sunshine" will undoubtedly enjoy popularity in the segment of our population that reads nature books. Without question its success will spur the creation of more books of the same sort.

C. BROOKE WORTH

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See also *Distribution and Taxonomy*: Bond; Mayr.

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