

Warbler and Wheatear. "Unseasonable records" and "Historical changes" close this section of the book.

"Accounts of species" takes up roughly two-thirds of the book. It is based, partly, on the bird records of Mrs. Cristel Bell (1963-69) which were published in a preliminary account of *The Birds of Sable Island* [1972, McLaren and Bell], and partly on more recent records established by Dr. McLaren, his colleagues and students. A list provided by A. A. Richard (1974-79) is also included. The annotated list has 325 species accounts which range from a one sentence entry on the Black-backed Three-toed Woodpecker to nearly a page on the Common Tern. The longer accounts contain useful historical references. Sixteen black-and-white photographs show a sample of representative and unusual species described in the accounts. The list

of references provides those interested in the avifauna of Sable Island with plenty of additional study material.

This book is an interesting combination of the old-fashioned "annotated list" and the modern "bird-finding guide." It is well researched, well written and reasonably priced. Maybe it is just as well that it is costly and difficult to get to Sable Island. This publication will definitely increase the desires of naturalists to visit this fascinating place. It is recommended.

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The Audubon Society Field Guide to North American Insects and Spiders

By Lorus and Margery Milne. Alfred A. Knopf, New York. 1980. 989 pp. Illust. \$15.50.

The creation of a field guide is always a difficult task because a number of conflicting requirements are made of such books. To appeal to the broadest audience (usually one with little background in the subject) the guide must be simple to use and unencumbered by excessive technical jargon. At the same time, any field guide must be accurate, be up-to-date, and provide as much pertinent information as possible. That both of these guides come close to fulfilling the first set of requirements is due primarily to the unique format that has by now become a trademark of this series.

Colour photographs are relied on as aids to identification; the 600-700 photos of individual species comprise the first section of each guide. The various species are grouped into sections on the basis of similarities of shape and colour, and identification is easily accomplished by first locating the correct general shape and finally by combining individual photographs with morphological descriptions from the text.

The second, and major section of each guide provides, in addition to the morphological description, notes on habitat, range, food or host, life cycle, and finally miscellaneous comments, which usually take the form of systematic notes. The guide to butterflies provides, in addition, short notes on flight period and on major distinguishing features of similar species.

In the case of the volume dealing with the insects and spiders this approach, overall, has met with only moderate success. The relatively novel grouping of the colour plates, while overcoming some of the basic problems of identification guides, has also created

new ones. For example, in the section dealing with bees and wasps one applauds the inclusion of the Syrphidae and other bee-like insects which are commonly mistaken for bees. Unfortunately this approach has been carried to extremes in some cases, and certain arrangements seem destined to confuse rather than aid in identification. The inclusion of the mayflies, for example, among the Diptera presumes a simplemindedness that is unlikely to be the case since even to the novice these insects bear little resemblance to flies. Similarly, based on their overall appearance, the owlflies and antlions should have been included with the dragonflies rather than the Diptera, a fact the text itself acknowledges.

While for the most part of excellent quality, in some cases the photographs themselves hinder accurate identification. Some, such as the photographs of larvae of the blackflies (Simuliidae) and net-winged midges (Blephariceridae), are taken from so great a distance that they are unrecognizable beyond being dark spots on a rock. A few misidentifications (e.g. *Hesperophylax* as *Grammotaulius*; a Caenidae nymph as Baetidae) further detract from the book.

Those anticipating a full taxonomic treatment in the text will be disappointed to find that within each order only a few families (usually those containing the larger or showier species) are mentioned. In turn, under each family heading only a few species are considered in detail. While those listed are usually the more common species, this is not always the case. In some families, for example the biting midges (Ceratopogonidae), the only species described is one of extremely local distribution. Thus the unfortunate impression is given (and remains uncorrected in the

rest of the text) that the family itself is extremely local.

These, as well as some dated classificatory arrangements, mar what is one of the best efforts yet to provide an easy to use field guide for those with little entomological background. While by no means worse than any other field guide to the insects and spiders, one final caution must be made. The temptation, easy to succumb to considering the format, to identify everything one sees to species should be firmly resisted. The incompleteness of a guide describing in detail fewer than 700 species out of a total fauna of more than 100 000 species is readily apparent.

The guide to the butterflies, by contrast, has avoided many of the problems mentioned above. Because the total fauna covered is only about 700 species, a fuller taxonomic treatment is possible. Ironically, this completeness serves to underscore many of the identification problems present in entomology as a whole. Only when trying to determine differences in two seemingly identical species of butterflies do the true difficulties of species identification become apparent.

Some basic problems with the photographs are very much in evidence. Blurriness, obscured taxonomic characters, and colour wash-out all serve to make identification of some species very difficult. Identifi-

cation of some *Colias* species, for example, may have to be abandoned for these reasons.

One major strength of the guide lies in the inclusion of a selection of photographs of immature stages. These, coupled with an index to species of host plants preferred by the caterpillars, should assist considerably in identification of the immatures.

The adoption of a number of recent taxonomic changes in the text may meet with some initial resistance by some users who may object to the shifting of the majority of *Boloria* species to the genera *Clossiana* and *Proclossiana* or similarly the shifting of *Pieris* species to the genera *Pontia* and *Artogeia*. Widespread acceptance, however, should gradually overcome any problems.

On the whole, the completeness of the information accompanying the plates, the ease of use in the field, and the transcontinental treatment of the fauna should go a long way toward making this one of the most successful field guides to the butterflies. A success, one might add, which it works hard to achieve.

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Character Variation and Evolution of Sibling Species in the *Empidonax difficilis-flavescens* Complex (Aves: Tyrannidae)

By N. K. Johnson. 1980. Publications in Zoology, Volume 112. University of California Press, Berkeley. x + 151 pp., illus. + 3 plates. U. S. \$9.50.

This book should be perused by those naturalists wanting details of the similarities and differences between two hard-to-differentiate *Empidonax* species (Western Flycatcher, *E. difficilis* and Yellowish Flycatcher, *E. flavescens*). The author measured and/or analyzed body weight, color, bill, toe, feather and wing length for more than 1280 specimens during a 10-year study involving 6 years of field work. More than 200 individuals were used to prepare more than 5000 spectrographs of songs. Objective multivariate analyses are conducted regarding the variation of habitat, song and morphology among 50 populations ranging from British Columbia to Panama within these two taxa. Many passages enlighten probable relationships among other flycatchers of North America. The Dusky, *E. oberholseri* and Hammond's, *E. hammondi*, flycatchers are heavily considered.

All populations of Western and Yellowish flycatchers considered utilize shaded woodlands near

flowing water for breeding. Males are slightly larger than females in both species, but *E. flavescens* is more sexually dimorphic than *E. difficilis*. Inland birds are larger than coastal birds. A see-saw pattern of deep bill depths, low song pitches, long toes, wings, and tails alternates with shallow bill depths, high song pitches, short toes, wings and tails over the geographic range of these flycatchers. Migratory populations have relatively pointed wings while non-migratory populations have rounded wings. In a comparison among the Western, Yellowish, and Hammond's flycatchers, the trend in variability for morphology at the intrapopulation level is antipodal to that at the interpopulation level.

The text is written in the style of a highly detailed scientific journal article with several sections reading like regular book chapters. Appendices include details of capture localities and comments on specimens. The text is relatively free from typographical errors and reads easily but several areas are too detailed (especially page 98). The photographic reproduction of most of the plates purporting to show habitats is of



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