

## BOOK REVIEWS

MARCY F. LAWTON, EDITOR

**Birds of the Pacific Slope.**—Andrew Jackson Grayson. 1986. The Arion Press, San Francisco, CA. 433 pp. + boxed set of 1 black-and-white and 156 unbound color plates. \$4,500.00.

One hundred and seventeen years after the death of Andrew Jackson Grayson, his monumental work, *Birds of the Pacific Slope*, has been published and his place as a major pioneer ornithologist in western North America is assured.

In his lifetime, Grayson was well known as a business man, writer of travel articles, and painter, but by the turn of the century his name was largely forgotten. In 1948, Lois Chambers Stone found over 150 of Grayson's paintings of birds in the Bancroft Library of The University of California at Berkeley. Mrs. Stone, herself an artist and daughter of Lee Chambers, long-time Business Manager of The Cooper Ornithological Society, was tremendously impressed with the paintings and published a short account (Taylor 1949, *Condor* 51:49-51) of Grayson's life and work, accompanied by a color plate of his painting of the White-fronted Parrot. From then until 1959, 23 of these plates were reproduced in *The Condor*, and overruns of several were used to illustrate the Check-List of the Birds of Mexico (Pacific Coast Avifauna no. 29 and 33). For nearly 40 years, Mrs. Stone worked toward getting all the Grayson plates reproduced full size (19" × 25") and collected material for a biography of Grayson. Both the plates and the biography have been published superbly by The Arion Press.

Grayson was born in 1818 in Louisiana. As a boy, he was stopped from drawing by an unsympathetic teacher and by his father, who thought that there was no future in such an occupation. The young Grayson therefore went into business. In 1846 he joined a group of pioneers on their way to California, where he settled in San Francisco. In 1853 he saw a copy of Audubon's work and determined to do for the Pacific slope of North America what Audubon had done for much of the rest of the United States. To embark on such a project at the age of 35 with no training or experience was remarkable and his success all the more so. For the last 10 years of his life (1859-1869), he made his headquarters in Mazatlan, Mexico, where much time was still occupied with business. He corresponded with Spencer F. Baird and collected numerous specimens for the Smithsonian Institution. At that time the birds of western Mexico were little known, and he discovered many new forms, including a large proportion of the endemics on Socorro Island and the Tres Marias. His paintings of these birds and his descriptions of their habits were the first and, in the case of some of the paintings, are the only ones of the species.

In reproducing Grayson's watercolors, The Arion Press has done an outstanding job, technically and artistically. The paintings show Grayson's artistic development from his early days in California to the

mature work of his later years in Mexico. Like Audubon, whom he admired, Grayson concentrated on depicting birds in the foreground with the plants in which he found them. Here, he is at his best. The birds, often two or three to a plate, are painted in clear colors and, with the vegetation, form a lively composition. Often the plates show the birds' food habits as Grayson observed them: Black-bellied Whistling Ducks in a cornfield or a Bat Falcon holding a parrotlet. The beauty of these plates is such that owners of the portfolio will be strongly tempted to frame their favorites and hang them where they can be enjoyed at length. In many plates, Grayson sketched in backgrounds to add atmosphere. These backgrounds were rendered in subdued tones that add depth to the paintings. The paintings of birds collected near his home in Mazatlan have a freshness and naturalness of pose not found in some paintings of the birds from Socorro Island, which were evidently made from study skins.

The book accompanying the portfolio of plates is also lavishly published. The biography of Grayson by Lois Chambers Stone and Grayson's notes on the birds represented by plates are the meat of the volume. The biography is both scholarly and readable, the author having skillfully interspersed her own writing with extracts from that of Grayson, his wife, and correspondents. In the last chapter, Mrs. Stone discusses Grayson's legacy as artist and scientist and describes his methods of note taking and painting. She also gives an account of his widow's futile efforts to have his work published and finally her gift of the paintings, notebooks, and other materials to the Bancroft Library. The many illustrations, several in color, include portraits of gonads, stomach contents, and occasionally, fat on his travels, a page from his field notebook, and reproductions of all his early published pictures of birds. Thus the reader gets a vivid picture of the man, his times, and his accomplishments. A selected bibliography and lists of Grayson's published writings and pictures are appended.

Grayson's contributions to the more scientific side of ornithology are also impressive. In these days of field guides and handbooks, it is not easy to imagine working in an area where many of the birds were unknown and identification of even the known ones was achieved by sending specimens to a distant authority and waiting months for his determinations. Grayson assigned each of his specimens a number and kept notebooks in which he recorded descriptions (including colors of soft parts), measurements, sex and condition of gonads, stomach contents, and occasionally, fat condition and anatomical peculiarities. One set of notebooks was organized by species and probably was the principal source for the set of notes on the plates. These were written after each painting was completed and are published verbatim in the book. They vary in length from a brief paragraph to three pages and reveal Gray-

son as a keen observer as well as a collector of data. I found especially interesting his descriptions of the similarity of Zone-tailed Hawks' flight with that of Turkey Vultures, the hunting methods of the Collared Forest-falcon, and nest-building by Yellow-winged Caciques. In sum, the notes provide a wealth of information on the status, habits, and appearance of many of the birds he studied. These, with Grayson's contribution of over eleven hundred specimens to the Smithsonian Institution, provided a foundation for our knowledge of the birds of western Mexico, Socorro Island, and the Tres Marias.

In addition to a preface, introduction, and index, the book contains an annotated list of type specimens of birds and mammals collected by Grayson, which, in spite of several minor errors, will be useful to systematists.

While the price of the work is beyond the means of most ornithologists, it is not exorbitant when one considers the current price of good bird prints. It presents the sum of Grayson's work and our knowledge of the man himself, in a form that will probably never be equalled. Mrs. Stone and The Arion Press are to be congratulated for producing a beautiful work of artistic, historical, and scientific value.—ROBERT W. STORER, Museum of Zoology and Department of Biology, The University of Michigan, Ann Arbor, MI 48109.

**Wildlife 2000: Modeling habitat relationships of terrestrial vertebrates.**—Jared Verner, Michael Morrison, and C. J. Ralph, Editors. 1986. University of Wisconsin Press, Madison. xxv + 470 p.

Efforts to preserve viable populations of animal species in the face of human-generated habitat alterations have been handicapped by a communication barrier between wildlife managers and research scientists. To the former belongs the difficult task of making and implementing land management decisions that determine the fate of wildlife populations. On the latter falls the burden of providing the manager with the scientific information to make those judgments accurately. The communication barrier exists because the manager has little time to study the population dynamics of animals under his care and may have little experience with computers or other tools now widely used by the research community, while the scientist often fails to design his studies or communicate his findings in a way that allows the manager to apply them successfully.

This volume is the result of an attempt to bring wildlife managers and research-oriented population biologists together to discuss these problems and share insights. It is "based on" a symposium held 7–11 October 1984 at the Stanford Sierra Camp in Fallen Leaf Lake, California. However, the editors state that not all the papers given at that meeting are included, and some not given were (apparently) solicited afterward. It is not clear which of the contributions were given at the symposium and which were added later. As its subtitle implies, the book focuses on modeling the relationships between habitat variables and terrestrial vertebrate populations. Modeling is viewed in its broadest sense; any ideational structure that might help

predict the responses of wildlife to habitat alterations is fair game. The editors and contributors clearly feel that models of some kind will be an essential component of any effective strategy for long-term management of wildlife resources. They are probably correct.

One of the strengths of this collection is its plan of organization. Its 60 contributions are divided into six sections, five technical and a final two-paper synopsis. By my reckoning, 36 of the 58 chapters in the first five sections deal directly with birds. (This emphasis may be viewed with justifiable dismay by mammalogists, herpetologists, etc., but it is probably an accurate reflection of the interests of both animal ecologists and the nature hobbyists who form the major public constituency for wildlife conservation efforts.) Each section is prefaced by a brief introduction. The contributions within each section are concise (generally 3–7 pages) and are followed by two short summaries, one by a researcher and one by a manager. I found these summaries to be especially useful for identifying the central themes emerging from each section, and for providing cohesion to what otherwise could have been a diffuse and disorganized collection of papers.

Section I, titled "Developing, Testing and Application of Models," contains 23 chapters and is by far the longest. Chapters vary widely in content. Most present methods of modeling habitat variables or attempt to evaluate assumptions underlying habitat-based models. Empirical data are compared with model predictions in many cases. Section II, "Biometric Approaches to Modeling," (6 chapters) describes various statistical procedures used in species-habitat modeling. This is the most technical section, but there is useful material here, even for the uninitiated. For example, the summary by Noon presents a good capsule description of appropriate applications of each of the major multivariate techniques currently in vogue among modelers. Elsewhere, Marcot points out that habitat variables often explain only 50% or so of the variation in species abundances.

Section III, "When Habitats Fail as Predictors," (8 chapters) clearly reveals some of the limitations of habitat-based models. Some important caveats are restated here, including the need for more long-term studies and the possibility that breeding bird densities may be held well below carrying capacity by factors operating in the nonbreeding season. In his summary, Van Horne makes a useful distinction between "intensive" and "extensive" approaches, and points out that management- and research-oriented workers are diverging in approach at a time when cross-fertilization of ideas is most needed. Section IV, "Predicting Effects of Habitat Patchiness and Fragmentation," (9 chapters) makes clear that even in protected areas wildlife is threatened by small preserve size, and by the progressive destruction of remnants of natural habitat beyond the boundaries of preserves. In this section Temple shows how woodland "core area" (the area more than 100 m inside the woods edge) predicts both avian abundance and occurrence better than total woodland area, a finding with important management implications. In another contribution, McLellan et al. show that a series of small reserves holds more bird species than a single large one of equivalent size, but that some "area-sensitive" species

requiring large blocks of homogeneous habitat would be excluded by a "many-small-reserves" management strategy.

Section V, "Linking Wildlife Models with Models of Vegetation Succession," (12 chapters) attempts to deal with the dynamic nature of vegetation. It consists almost entirely of nonempirical computer simulations of directional changes in vegetation structure and/or composition. We have no shortage of models that simulate such processes, but generally lack models for wildlife population dynamics as animals attempt to "track" these vegetation changes.

Some additional thoughts that emerge from this volume, in no particular order: —The fit of empirical data to many habitat-based models is poor, most likely implying either (1) faulty assumptions by the modeler, or (2) that population variations occur independent of habitat structure, induced by such factors as climate, competition, predation, disease, or events spatially or temporally removed from the study site or season.

—Given limited time and resources, a central problem is the trade-off between sampling a large number of points superficially and intensive study of a few sites. The choice must be made based on the dictates of each situation, but the result is almost always a less-than-ideal compromise.

—The 95% threshold for statistical significance may be too rigorous a criterion for accepting a model's validity. Game managers would be pleased if a model predicted the response of an animal population reasonably well 70–80% of the time.

—The variety of models now in use is probably a strength rather than a weakness. Wildlife species differ so widely in ecological requirements, habitats, population dynamics, etc. that no one model or family of models can be expected to provide good predictive power for all species in all situations. In particular, models aimed at the preservation of a single species will be very different from models for maximizing species diversity in a complex landscape. A disturbing thought is that we may have to develop a new model for every situation. Can any model with enough generality to apply to more than a single population at a single place and time retain enough precision to be useful? The answer is still far from clear.

—As models become more complex, the communication gap between modeler and manager widens.

—The development of models is far outstripping their rate of application in the real world. We have a long way to go in evaluating the usefulness of the models already available.

The bottom line seems to be that too many models are unrelated to the needs of managers, and that many managers have neither the time or the background to make effective use of the few helpful models available. Managers and scientists must begin to function as a team. This thought-provoking and useful volume represents a giant step in that direction. The editors are to be complimented for succeeding in pulling together the products of so many diverse viewpoints and personalities. —ELLIOT J. TRAMER, Department of Biology, The University of Toledo, OH 43606.

**Species-checklist of the birds of New Guinea.**—Bruce M. Beehler and Brian W. Finch. 1985. Australasian Ornithological Monographs No. 1. Royal Australasian Ornithologists Union, Victoria. 127 pp. A\$6.00.

**Birds of New Guinea.**—Bruce M. Beehler, Thane K. Pratt, and Dale A. Zimmerman, with text contributions by Harry L. Bell, Brian W. Finch, and Jared M. Diamond; illustrated by Dale A. Zimmerman and James Coe. 1986. Princeton University Press, Princeton, New Jersey (published simultaneously as Handbook No. 9, Wau Ecology Institute, Wau, Papua New Guinea). xvi + 296 pp., 55 color plates, 16 line drawings, 5 maps, 1 table. \$65.00 (cloth).

**The birds of Papua New Guinea, Vol. 1 Non-Passerines.**—Brian J. Coates. 1985. Dove Publications, Alderley, Queensland, Australia. 464 pp., 493 photographic plates, 47 line drawings, 361 distribution maps and 2 endplate maps, 4 tables. A\$75.00, US\$65.00.

These two books and the monograph represent the culmination of a decade of work by the respective authors and collaborators, a list that reads like a "who's who" in New Guinea (NG) ornithology. Coates and Beehler and associates have brought within reach, in many cases for the first time, the birds of NG, the Bismarck Archipelago, and the north Solomon Islands. The significance of the books can perhaps best be appreciated in the realization that there was nothing before them, with the notable exception of regional guides listed below. There was no illustrated field guide for NG birds, there was no guide of any kind to the birds of the Bismarcks or many of the NG satellite islands, and what information was available was scattered in hard-to-find publications. Any criticism that can be offered has to be weighed against the vast contribution these books made to the study of NG and South Pacific birds. People working in the NG region have anxiously awaited their appearance for 5 years, and it's exciting to finally see them.

The books and monograph contrast, but mostly complement, each other in what they offer and in their styles. First, the areas covered. Beehler and Finch and Beehler et al. deal with the Papuan region as originally delineated by Mayr (1941, List of New Guinea birds, American Museum of Natural History, New York). This area includes the whole of the NG mainland and its satellite islands; it does not include the Moluccan Islands, the Bismarck Archipelago, or the Solomon Islands. Coates covers the birds of Papua New Guinea (PNG) as it is defined politically—the eastern half of the island of NG, the Bismarcks, and the north Solomon Islands (Bougainville and Buka). The authors thus overlap coverage of birds of the PNG mainland and the D'Entrecasteaux and Louisiade Archipelagos.

Beehler and Finch compiled the checklist as a foundation for the field guide. The motivation for this was the need to overcome wide-spread confusion over nomenclature of NG birds, most of which have two, and some up to five, synonyms. Their attempt to set a standard and resolve outstanding controversies is admirable. They used a reasonable and conservative protocol for deciding on English names and, in general, those names newly introduced were well chosen and represent a consensus of opinions of an expert committee. The checklist is completely annotated, with

notes on nomenclature at both the family and species level. The index includes all synonyms, which should help reduce further confusion.

Unfortunately, Coates did not adopt the checklist, but instead used a combination of current and outdated nomenclature. Thus, to a certain extent, the quest for standardization continues, but I expect that most authors will adopt Beeher and Finch's list. This problem is confounded in that Coates lists subspecies, whereas the checklist does not. Nomenclature of subspecies will thus have to be determined by cross-reference.

The field guide should enjoy immediate, well-deserved success. It supersedes Beeher's regional guide (1978, Upland birds of northeastern New Guinea, Wau Ecology Institute Handbook No. 5, Wau). The species accounts cover 717 species; the 708 known to occur in the Papuan region and 9 probable vagrants. An additional 46 species, mostly shore, water, and seabirds, whose status is listed as possible vagrants or unconfirmed sightings, are also briefly treated. Nomenclature and taxonomic ordering mirror that in the checklist, with the following exceptions: *Aviceda subcristata*, *Elanus caeruleus*, *Pachycephala pectoralis*, and *Gralina cyanoleuca* are given different English names in the two publications, and the specific ordering of the Tytonid owls differs between the two. I suspect these are just minor errors. The authors consider the recently described *Malurus campbelli* (Schodde and Weatherly, 1982, The fairy-wrens, a monograph of the Maluridae, Lansdowne, Melbourne) as a subspecies of *M. grayi*, but provide a description, illustration, and discussion. Almost all of the species are illustrated on color plates with oceanic birds the only major exception.

A lengthy introductory section entitled "Papuan Natural History" provides information on ornithological exploration in NG, features of the environment, ornithogeography, geological reference points for birds, ecology, and conservation and the future. Advice for first time visitors is found in the section "In the Field." A gazetteer of NG bird localities, a regional map, bibliography, and index appear at the end of the book.

The species accounts are well organized, with sub-headings on synonyms, description, similar species, habits, voice, and range. When distributional patterns aid in identification (e.g., species on isolated ranges), these are included in the description. Because of the paucity of information, for many species the text emphasizes only identification. For the majority, however, the accounts provide original or up-to-date review information on behavior, habits, diet, and voice.

The color plates are high quality, but at least three appear to have been printed far to the right so that the illustrations are cut off slightly. In a paperback copy I saw, the color separations in several plates were offset from each other, producing fuzzy illustrations. While both artists are very skilled, I found the paintings by Zimmerman more technically correct than those by Coe, but I liked the style of Coe better. The color in the plates of rails, fruit doves, and parrots seems exaggerated, and I found two of three black and white plates of flying raptors rather poor. The book is published in a now standard Princeton field-guide style. The clothbound versions appear sturdy, but I can attest

from personal experience that the paperbacks do not stand up well to use in the field in NG.

Coates' book is somewhere between a handbook, a reference book, and a field guide. He spent 11 years in PNG observing and photographing birds, and this book is a summary of that work as well as that of others. The book's style suggests that this is Coates' personal statement about his fascination and experience with PNG birds. This is also evident in the fact that Coates published the book privately. What he accomplished is impressive. There is much original information and his review is thorough. His treatment of the birds of the north Solomons updates that of Hadden (1981, Birds of the north Solomons, Handbook No. 8, Wau Ecology Institute, Wau, PNG).

Species accounts are given for 377 species and an additional five vagrants. The discrepancy between nomenclature of the field guide and Coates' book is made worse by Coates not listing what his reference for taxonomy and nomenclature is. This is a shortcoming. Slightly more than half (220) of the species are illustrated by photographs and 26 others are illustrated in line drawings. There are photographs of 12 species of passerines as well, and 34 photographs of habitats, general scenery, and people in PNG.

The book's introduction covers avifaunal origins, endemism, ecological relations, and breeding phenology. There are also discussions of the area's physical features, climate, the seven recognized major environments and vegetation types, and an analysis of 25 major habitats with respect to bird distributions. Biogeographic data and species numbers for 13 major islands in the region are provided.

The species accounts include data on size (just total length), field description, distribution and extralimital range, habitats, altitudinal range, relative abundance, general habits, displays, nesting, and subspecies. With the exception of mensural characters for all species and plumage descriptions of subspecies, the accounts summarize virtually everything that is known about each species to the present date. This, of course, varies widely and the accounts range from one half of a page up to five pages in length. The distribution maps are the first attempt to graphically illustrate the distribution of PNG birds and they are commendable in their completeness. Extralimital sight records and specimen localities are included on the maps.

The photographs are, with few exceptions, excellent and some are stunning. The photographs do more than illustrate the species; in many cases they show display behavior and nesting habits. For many species, there are two or more photographs and for some there are up to eight. The line drawings, although rather rough, do serve to illustrate species for which Coates could not get photographs, and they show display behavior or nesting sites of others.

In summary, these books were worth the wait and are well worth their price; they rank among the most important books on NG birds ever published. The field guide will be a necessity for anyone visiting NG. Coates' book is extremely important as a reference, and as an original source of information on the birds of the Bismarcks. Hadden's guide remains a more compact field guide to the birds of the north Solomons. The impor-

tance of Coates' book will be magnified if the expected Vol. 2, which will cover passerines, appears in a timely manner; I hope that it does. The checklist will be important to anyone concerned with nomenclature of NG birds. It should be noted that the authors of the field

guide are donating all profits to the Ecology Fund of the Bernice P. Bishop Museum in Honolulu to promote ornithological research in NG.—S. G. PRUETT-JONES, Department of Biology, C-016 University of California at San Diego, La Jolla, CA 92093.

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