

Preface

This third edition of *Ornithology* strives to capture the vital features of the biology of birds from a contemporary ornithological perspective. As in the preceding editions, I designed it primarily for undergraduate students, but I have always had in mind, as well, bird enthusiasts young and old, who simply want to know more about birds.

Ornithology invites the participation of persons with great diversity of backgrounds and interests. I hope, therefore, that this book will be useful to similarly diverse readers. To this end, I have tried to share the excitement that birds and some knowledge of them afford me.

This edition, like the earlier ones, avoids theory for theory's sake. It stresses discovery rather than the mathematical models that may guide discovery. To make the book accessible to readers who are not specialists, I define technical terms clearly when they are first used. Additionally, the enhanced, comprehensive index refers the reader to the first use of a term and its definition.

The power of evolution by natural selection is the central theme of this book. The adaptations of birds ranging from morphology and physiology to migration and mating systems are testimony to the pervasive role of Darwinian evolution in action through the millennia. Evolution is responsible for the transformation of birds from dinosaur-like ancestors, for the display traits and mate choices of birds, for their sensitivity to geomagnetism and ultraviolet, and for their advanced intelligence.

Conservation is a strong theme of this edition. Once a sideline of ornithology, conservation science is now a central focus of interest of students and faculties alike. As barometers of environmental quality and ecosystem health, birds engage scientists and the public in the stewardship of landscapes and waterscapes. Most chapters of this book include specific examples of conservation challenges and successes. Chapter 21 provides a broad overview of conservation matters facing birds, with an emphasis on hope rather than despair.

This new edition is overdue, with apologies to colleagues and students who patiently waited too long for an updated text. The advances in ornithology in the last decade have been diverse and substantial. The ornithological literature is a huge and growing enterprise due in part to the major contributions of birds to biological understanding. The task of updating was much greater than I initially thought it would be. Consequently, I revised and updated all chapters with new information

or perspective and completely rewrote some of them. Many more changes will be required to stay current.

This third edition of *Ornithology* includes much that will be familiar to those who have used the second edition. It also includes some substantial changes. I have responded gratefully to the constructive suggestions provided by colleagues informally through the years and formally in candid reviews of the second edition solicited by its publisher, W. H. Freeman and Company. With the help of many others, I have also tried to identify exciting prospects for study in the future.

The sequence of chapters in this edition is basically the same as it was in the second edition. This edition, however, contains fewer chapters, 21 rather than 24. The reduction of chapters is due mostly to redeployment of the second-edition contents of Chapter 7 on feeding, Chapter 9 on visual communication, and Chapter 13 on navigation. These topics are now integrated into third-edition Chapters 6 (Physiology), 7 (Senses, Brains, and Intelligence), 10 (Migration and Navigation), and 12 (Mates).

I also reorganized the second-edition chapters on reproduction and development into Avian Life Histories (Part 5) to correspond more strongly to the modern integration of these topics based on life-history theory. First, following the advice of colleagues, I changed the sequence to start this section with Mates (Chapter 12) to establish the core principles of sexual selection. Next, a new chapter, Breeding Systems (Chapter 13), considers the advances in understanding the breeding behaviors of birds, including the roles of extra-pair fertilizations. The next two chapters deal with the fundamentals of avian sexual reproduction to the point of egg laying (Chapter 14) and the incubation of eggs in nests, including the development and hatching of the chick (Chapter 15). Posthatching development plus parental care of chicks follows logically in Chapter 16. Formal life-history theory, including life-table analysis and lifetime reproductive success, the subjects of Chapter 17, then conclude Part 5 and lead to chapters on population dynamics in the final section of the book.

Students and faculty alike responded favorably to the use of boxes to separate particular examples, important technical information, and recent discoveries from the text. This edition continues that innovation to call attention, for example, to the main features of the complete genome sequence of the chicken announced in December 2004 (Box 2-1) and the timely topic of avian flu (Box 18-2).

The substantial appendix on the birds of the world has been repositioned in this edition as a dynamic Web-based resource. "Birds of the World" is available on a free-access companion Web site at www.whfreeman.com/gill3e for both instructor and student. In addition to reviewing the relationships among the families of world birds, the new Web site tracks the rapid-fire advances in our understanding of avian systematics based on DNA sequence analyses, and at the same time includes links to the best visual resources available on the Internet.

The art program features many detailed drawings of birds and their anatomy, some less detailed schematic figures, and some black-and-white photos. Drawings are the dominant feature of the art program. One major addition is the "Closer Look" feature added to various figures throughout the book. This feature is intended to showcase a detail or related concept and to make certain figures less diagrammatic.

Most of us refer to birds by their English names, which seem to change too frequently, to be the same for different species on different continents, or to vary

from list to list. Which English names to use has been an ongoing challenge for many authors.

This edition of *Ornithology* mentions a total of 745 species found throughout the world. It adopts the newly available International English Names recommended by the International Ornithological Congress (IOC) for these species (Gill and Wright 2006). In general, this list adopts names with a history of traditional use. The names, however, conform to a set of rules formulated through a consensus of leading ornithologists worldwide. The rules largely define the use of hyphens, the use of single names, the structure of group names, and so on.

Most of the recommended English names will be familiar and will match those in the second edition. A few, however, differ and await adoption in North America by the American Ornithologists' Union Committee on Systematics and Nomenclature. The following list of the few significant name changes adopted in this book will help readers track and adjust to them.

IOC Recommended Name	Former Name
Great Northern Loon	Common Loon
Black-necked Grebe	Eared Grebe
Common Pheasant	Ring-necked Pheasant
Angel Tern	Common White-Tern
Little Auk	Dovekie
Common Pigeon	Rock Dove or Rock Pigeon
Common Starling	European Starling
Sand Martin	Bank Swallow
Two-barred Crossbill	White-winged Crossbill
Saltmarsh Sparrow	Saltmarsh Sharp-tailed Sparrow

Finally, as in the preceding editions, the English names of bird species are always capitalized to leave no doubt that, for example, a Brown Booby is *Sula leucogaster*, not just a booby that is brown. In accord with Kenneth Parkes (1993), "chicken" or "domestic fowl" refers to domesticated forms of the Red Junglefowl; "turkey" or "domestic turkey," to domesticated forms of *Meleagris gallopavo*; "pigeon" or "homing pigeon," to domesticated forms of *Columba livia*; and "Japanese Quail," to laboratory strains of *Coturnix*, which remain of uncertain taxonomic status.

Possible supplements to this textbook abound in both bookstores and on the Web. Sibley's *Guide to Bird Biology and Behavior* (2001) is an excellent introductory complement to *Ornithology*, complete with a glossary and links to David Sibley's wonderful field guides. The Cornell Lab's *Handbook of Bird Biology* is a major reference work for students to further explore a wide range of topics. Comprehensive accounts of individual species are available in *The Birds of North America, Life Histories for the 21st Century*. Most university libraries subscribe to this encyclopedic work, which also is available on the Web with video and sound (<https://bna.birds.cornell.edu/BNA/>).

This edition has benefited greatly from comments by many colleagues and students. The next edition will do so also. I sincerely invite creative suggestions, corrections of errors, updates, and reprints containing interesting, new ornithological information. Thank you.