

Tucker, Guy McCaskie, Harold Axtell, and Victor Emanuel, to name but a few). Though listing of new species eventually becomes humdrum, this book would make a good present for any fanatic birder of your acquaintance, whether or not that person is familiar with the term IDIOT (Incredible Distances In

Ornithological Travel), introduced to us with Kaufman's quiet humour.

C. STUART HOUSTON

863 University Drive, Saskatoon, Saskatchewan S7N 0J8
Canada

Reproductive Biology of Bats

Edited by Elizabeth G. Crichton, and Philip H. Krutzsch.
2000. Academic Press, San Diego. xi + 510 pp., illus.
U.S. \$99.95.

This edited volume brings together 16 researchers summarizing 11 specific topics on the reproductive biology of bats. Although there are general reviews and works on various aspects, there is no single comprehensive source that compiles the full breadth of biological knowledge of bat reproduction. In terms of extant species and global distributions, bats are the second most successful group of mammals, next to rodents. The reproductive potential of bats is considered constrained, however, with typically one young produced only once or twice per year. This deficiency is compensated by a diverse array of reproductive strategies that have benefited them in radiating to most environments throughout the world. But to understand and study the unique and fascinating mechanisms employed by bats and their associated life history traits is difficult but challenging because of their small size, nocturnal behaviour, and ability to fly.

The first three contributions deal with endocrine control of reproduction in bats. These cover the interactions of the hypothalamic-pituitary complex (written by E. L. P. Anthony), circulating gonadal hormones (L. Martin and R. T. F. Bernard), and peripheral endocrines (G. G. Kwiecinski and D. A. Damassa). At present, the current state of knowledge of bat endocrinology is considered in its infancy. As knowledge on the captive breeding of bat colonies improves, increased breadth in experimental design will shift research from the accumulation of baseline data to an emphasis on the role and mechanisms of reproductive hormones.

Two chapters are devoted to the morphology and physiology specific to the male (P. H. Krutzsch) and female (J. J. Rasweiler, IV and N. K. Badwaik) reproductive tract of bats. More so than other groups of mammals, bats have a higher frequency of anatomical asymmetry such as dominance of one ovary. The adaptive significance of this may be to avoid more than one young per litter. There is a limit to the amount of extra weight that a pregnant female can carry while maintaining flight and con-

tinuing to forage, a size constraint worthy of in-depth study in relation to reproductive form and function. Pregnancy (N. K. Badwaik and J. J. Rasweiler, IV) is also thoroughly discussed including preimplantation development, implantation of the blastocyst, and development of placental organs and foetal membranes.

Male activity patterns in bats are usually closely synchronized to female reproductive cyclicality. Reproduction seems to be timed so that lactation, the most energetically expensive part of reproduction, occurs during the peak of food availability. This can be facilitated by sperm storage, a subject covered by E. G. Crichton, and a phenomenon unique in bats because of the extended time intervals involved. Considering the potential benefits of sperm preservation in humans and domesticated animals, research into the mechanisms and physiology in bats is an area of study deserving attention.

There is an overview of life history traits and reproductive strategies of bats (P. A. Racey and A. C. Entwistle). Topics include seasonality and reproductive patterns, reproductive delays and their adaptive significance, and the limits of reproduction. A complementary paper discusses the effects of environmental regulation on the reproductive ecology of bats (P. D. Heideman). Separate chapters also deal with mating systems in bats (G. F. McCracken and G. S. Wilkinson), and parental care and postnatal growth (T. H. Kunz and W. R. Hood).

The content ranged nicely from general reviews to more specific in-depth studies; however, I thought the order of chapters could have been better organized. Reproductive strategies and environmental regulation, two chapters near the end, would have been good introductory discussions for the book. This would have given a firm basis to the more specialized sections dealing with endocrine control, which were presented first, but the chapters are nonetheless independent works of study. One apparent editorial oversight is the absence of references for literature cited in the preface. Overall, the information is attractively presented with each

chapter having a table of contents, appropriate headings and subheadings, discussion or summary, and extensive up-to-date references. However, based on content and price, the book is definitely geared to the professional bat researcher as opposed to the amateur bat naturalist. It will be the source to consult for years to come on reproductive biology of bats. Not only is it a summary of the current

state of knowledge, but areas in need of research are also identified.

BURTON K. LIM

Centre for Biodiversity and Conservation Biology, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario M5S 2C6

BOTANY

Phycology

By R. E. Lee. 1999. 3rd Edition. Cambridge University Press, Cambridge. 614 pp. Cloth U.S.\$202.60, paper U.S.\$72.85.

Algae

By L. E. Graham and L. W. Wilcox. 2000. Prentice Hall, Upper Saddle River, New Jersey. 640 pp. U.S.\$100.95.

It is a rare event when one can welcome the return of an old friend dressed up in new clothes (Lee) along with a brand new kid on the block (Graham and Wilcox). Lee's text has arguably been the best algal textbook for the last 20 years. The new edition updates a strong second edition (from 1989) and improves the general presentation. Graham and Wilcox (henceforth G&W) have used a new approach, and produced a stunning book that will replace Lee for many people as the textbook of choice. Both of these books offer excellent systematic surveys, great introductions to comparative ultrastructure and the basics of algal physiology, ecology, and cell biology. G&W offer a more comprehensive ecological perspective and have emphasized molecular analyses in putting algae into a phylogenetic context.

The 61-page introductory chapter in Lee describing the basic characteristics of algae may be the single best summary available for algae in that it encapsulates algal diversity in the contexts of morphology, ultrastructure, biochemistry, and ecology. Thus, if you are teaching plant diversity or aquatic ecology, here is the essential information on these organisms. Lee, at 614 pages, is not as comprehensive as G&W with 699 pages (with 50% greater print area per page). This might make Lee more attractive in algal survey courses where one doesn't want students confronted with quite so much information. One of the features of Lee that I have liked from the beginning is the photographs of prominent phycologists. This helps convince students that science is done by people, and that the material in textbooks is not divine revelation!

G&W is simply the best algal textbook to date. The strongest feature is that in addition to the 15 chapter systematic survey of algal groups that is

standard in algal texts, there are eight chapters that are conceptually based and integrate across all algal classes. This includes chapters on biogeochemistry, technological applications, biotic associations, molecular methods and phylogeny reconstruction, endosymbiosis, as well as chapters on phytoplankton, macroalgal, and periphyton ecology. The chapter on phytoplankton ecology contributed by J. M. Graham is one of the highlights of the book. In addition to the word-based descriptions of ecological and biophysical processes, Graham provides quantitative accounts of these phenomena, as well as sufficient background to make it possible to teach this material to undergraduates. This material may not be for everyone, but it helps justify why we make biology students take calculus! One general complaint about this book it is that there are five chapters dedicated to the green algae; i.e., one for each of the classes. Thus the pagination dedicated to brown, red and green algae is 32:54:146. Since the background of the authors is with freshwater algae, this bias does not surprise me. The chapter on biotic associations is weak on marine algal symbioses, and fungi are mentioned only in the context of lichens and microalgae.

The classification in G&W is much more current. Thus the seven orders that Lee recognizes give a very different perspective on phaeophytes than the 14 of G&W. Similarly, the larger number of red algal orders (10 versus 18) gives a more current aspect to G&W. The additional orders of G&W are not a case of splitting, but a recognition that modern morphological and molecular systematics have helped define these monophyletic groups. This difference in conceptual underpinnings is epitomized by the fact there are only two phylogenetic trees in Lee, compared to the numerous cladograms in G&W. These two books are extensively referenced, although G&W has many more bibliographic entries. In addition, G&W appears to be more current with over 40% of the references post 1990. This contrasts with Lee where only 20% of the references are post 1990.

Both books are well illustrated with lots of functional to high quality line drawings, and good to excellent black and white photographs. The line draw-



Lim, Burton K. 2001. "Reproductive Biology of Bats, ed. Elizabeth G. Cricton and Philip H. Kruntsch [Review]." *The Canadian field-naturalist* 115(3), 525–526.
<https://doi.org/10.5962/p.363845>.

View This Item Online: <https://www.biodiversitylibrary.org/item/108859>

DOI: <https://doi.org/10.5962/p.363845>

Permalink: <https://www.biodiversitylibrary.org/partpdf/363845>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.