



## Book review

### **Gorilla Biology: A Multidisciplinary Perspective.**

Edited by Andrea B. Taylor and Michele L. Goldsmith (2002). Cambridge University Press, Cambridge. 528 pp. ISBN 0521792819

*Gorilla Biology* is the first book to attempt to integrate studies of gorilla morphology with population genetic data and with up-to-date information about gorillas gleaned from studies of several groups of gorillas in their natural habitat. It is rich in information about gorilla biology and on the state of gorilla populations across equatorial Africa. As pointed out by Caroline Tutin in her perspective on behavioral ecology, gorillas are among the most intensively studied primates in terms of the cumulative years of fieldwork. Therefore, it is surprising that there is a dire shortage of the type of information that should have been compiled in this useful and timely book.

The book is in four parts, devoted to taxonomy, molecular genetics, behavioral ecology, and conservation, respectively. The chapters and introductory perspectives are written mostly by participants in a symposium on gorilla taxonomy held in Columbus, Ohio, in 1999 in honor of H.J. Coolidge. This explains why the book is “heavy” on taxonomy. It is multidisciplinary as far as containing contributions from various disciplines, but unfortunately the many interesting individual contributions are not well integrated and the book falls short of providing a clear overview of gorilla-related biological research.

The short general introduction to gorilla biology by the editors Andrea Taylor and Michele Goldsmith catches the reader’s interest and

curiosity. So does the introductory perspective by Russell Tuttle that summarizes the various current views on gorilla taxonomy and the mostly dire state of natural gorilla populations. These are followed by a useful historical perspective by Colin Groves on gorilla taxonomy discussing the sobering amount of change that has taken place (best described as a fickle pendulum swinging irregularly between “splitting” and “lumping”).

While readers could not fail to be impressed by the number of measured gorilla crania (curiously heavily male biased), and the diversity of methods used to analyze and apportion their variation, as a non-taxonomist and non-gorilla specialist, I found the five chapters on morphology (mostly skeletal) and taxonomy a tedious read. I certainly would have much preferred to encounter more information on live gorillas before the long discussions of cranial variation, consisting in large part of re-analyses of Colin Groves’ original data set with the addition of various novel data. It struck me that the importance of soft tissue anatomy appeared neglected and, with the exception of forelimb ontogeny, the databases consist almost entirely of cranial measurements.

The book would have benefited from an introduction to gorilla biology that referred not only to the excellent descriptions of gorilla social systems by David Watts and Juichi Yamagiwa found later in the book, but also to readily accessible maps of the distribution of wild gorilla populations. There are at least seven different maps scattered in the chapters, but none in the introduction or inside the cover. It would also have been helpful to have provided illustrations of the kind of phenotypic differences that are

discussed at length in the taxonomy section (including the phenotypic overlap between small gorillas and large common chimpanzees). In these times of easily produced graphics, a summary panel with key soft and hard tissue features, including the large colon and cecum and the many traits measured for the taxonomic analyses, would have been helpful. The other three parts of the book suffer from a similar lack of illustrations. For example, tables summarizing the loci used in the published genetic studies, information about diet, life history, and existing gorilla conservation projects would have greatly added to the value of this book to the non-specialist.

In the introduction we are told that the biology of captive gorillas is beyond the scope of this book. I was surprised by this statement for, while the number of studies on captive gorillas is still very limited, the book does contain data from the skulls of captive animals and very interesting findings on taste preference of captive gorillas in the San Francisco Zoo. The treatment of gorilla pathology and biomedicine was limited to anecdotal evidence. A book on gorilla biology would have greatly benefited from the inclusion of biomedical information, especially given the crucial role of disease in conservation as discussed in the last part of the book. Similarly, summaries of existing data on reproductive physiology and endocrinology would have been welcome.

Throughout the book, the term “molecular” is used as synonymous with “molecular genetic.” However, the many molecules not involved in heredity such as lipids, proteins, sugars and their various combinations remain poorly studied in gorillas, and their study will likely provide important clues about gorilla biology. It is one thing to point out that molecular phylogenies based on a single or a few loci do not always represent the true population history, but one cannot have it both ways, only citing molecular data about phylogeny when it is consistent with one’s favored morphologically based taxonomy.

In a multidisciplinary book such as this, it would have been enormously helpful to explain how single gene phylogenies can be inconsistent with the species phylogeny, and why mitochondrial genomes are more readily affected by population history. In many cases (e.g., modern humans), the key findings based on mtDNA have been mostly consistent with later detailed findings based on hundreds of nuclear loci. I also looked in vain for a discussion of cytogenetic evidence about gorillas. Given that the two species of the genus *Pan* and the two species of *Pongo* each have unique chromosomal changes (Y in *Pan*, Y and #2 in *Pongo*) it would be relevant to know if similar differences exist between eastern and western gorillas. For the molecularly inclined, it always helps to point out that chromosomes are very large molecules. The absence of “chromosome,” “cytogenetics,” and “biochemistry” in the index was surprising.

One of the highlights of the book is Alexander Harcourt’s perspective piece on gorilla conservation. His discussion of the importance of the presence of scientists and their large teams of dedicated field researchers and assistants, often drawn from the local population for the effective conservation of local gorilla populations, is a reminder of the substantial benefits that can accrue from field studies.

As will be apparent to the readers of this review, I was expecting more from this recent book on gorilla biology. The book does contain a wealth of urgently needed information and will hopefully be read by many with an interest in great apes, human evolution and conservation. May the aspects neglected in this volume and by researchers receive attention before it is too late.

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