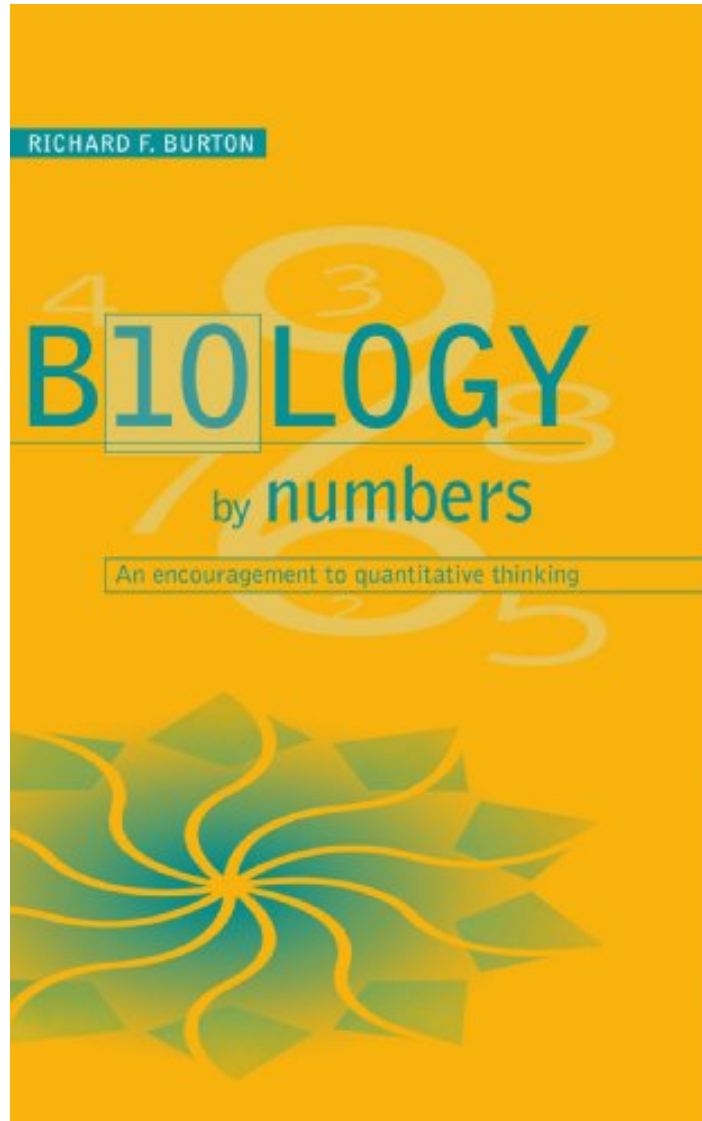


(Download pdf) Biology by Numbers: An Encouragement to Quantitative Thinking

Biology by Numbers: An Encouragement to Quantitative Thinking

Richard F. Burton

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Richard F. Burton : Biology by Numbers: An Encouragement to Quantitative Thinking before purchasing it in order to gage whether or not it would be worth my time, and all praised Biology by Numbers: An Encouragement to Quantitative Thinking:

4 of 4 people found the following review helpful. Back-of-the-envelope modelingBy A CustomerThis is a primer on modeling for biologists. It is written to reduce mathematics fears of budding biologists. But it offers plenty of interesting biology for the mathematically oriented non-biologist (I hold a physics degree), but absolutely no new

maths. The book proceeds by examples which use similar techniques but which may differ considerably: exponential relationship examples include pollen grains in sediments as well as attractiveness of dung for dungflies. For the mathematically proficient, this can be bedside reading, as most the calculations can be done mentally. For the more mathematically inclined, Karl Sigmund's book *Games of Life* offers wonderful mathematics of biology. 0 of 0 people found the following review helpful. Good stuff if so inclined...By Dennis Mitton Burton, in *Biology by Numbers*, offers a useful and needed toolbox that I wish was required reading in basic biology courses. There's nothing groundbreaking here and nothing that anyone armed with basic algebra can't follow but that's part of the argument: math is a useful tool even for the field biologist. Modern biology is very much a mathematical sport: I've spent hours and days doing statistical analyses of thousands of sample points looking for elusive trends. Burton takes us back a bit to the good ol' days of the life sciences when biologists were mostly field workers. And as much as that field work is enhanced by a little quantitative modeling *Biology by Numbers* will be useful. I also saw a few old friends - exponential decay? - used in ways that I hadn't thought of. Good stuff!. The prose? This is mathematical writing. It's hard to keep the reader on the edge of their seat but he writes clearly and understandably. Little knowledge of biology is needed - he walks you easily through the scenarios he presents - and the math is easy to follow. There's no reason to read straight through though each chapter builds on the former. The chapters are divided sensibly and each makes for interesting reading. It's not quite Sherlock Holmes but still a nice fireside read well worth the price.

This textbook is both an introduction to quantitative biology and a guide for the number-shy. Richard Burton fosters a sense of the fundamental importance and usefulness of mathematical principles in biology, with a fascinating range of examples. The book is geared toward the nonmathematician, and covers the basics as well as various more advanced topics from many diverse biological disciplines. Questions and calculations encourage active participation without holding up the casual reader. A key feature is the structure of the book. Rather than building it around biological disciplines, Dr. Burton emphasizes the common ways of reasoning used in areas as diverse as insect and population growth, seed mortality, and sensory response (to mention a few that use logarithms).

"As a gentle introduction to mathematics for the numerically phobic biology undergraduate, Richard Burton's *Biology by Numbers* could hardly be bettered. Well-chosen examples take the agony out of algorithms and the confusion out of calculus." *New Scientist* "...Burton's book is a cornucopia of such succulent biological fruits as the snail albumin gland, grazers on grasslands, sodium in the diets of moose, and the allometries of stag beetles. Taken in a single serving, it makes for a very rich diet. The book is designed to attract two types of readers: the mathematically inclined who seek an introduction to biological problems, and the mathematically timid who sense a need to use quantitative methods to make sense of biology." Fred Adler, *Bulletin of Mathematical Biology*

About the Author Richard Francis Burton was an explorer, translator, writer, soldier, spy, fencer, and diplomat. He is most famous for his translations of *One Thousand and One Nights* and the *Kama Sutra* and for having been the first European to visit the Great Lakes of Africa. He traveled to Mecca in disguise and spoke nearly thirty languages. He died in 1890.