Scaling: Why is Animal Size so Important?

Knut Schmidt-Nielsen
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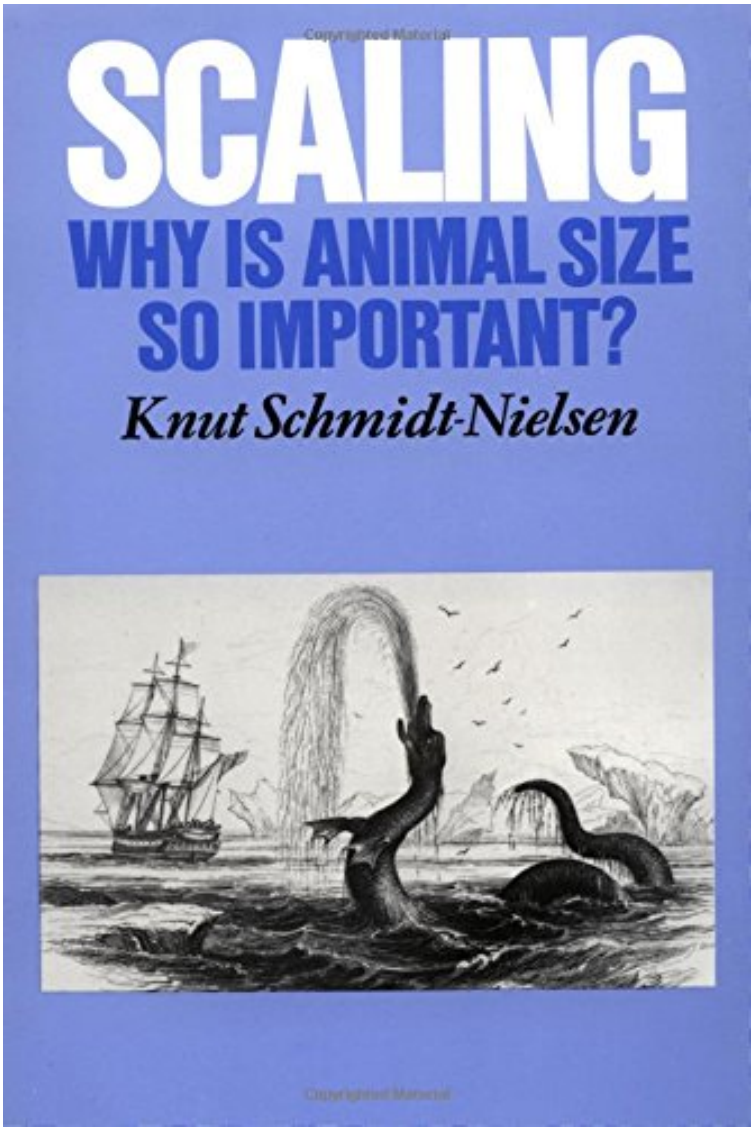

#1137087 in Books Cambridge University Press 1984-07-27Original language:EnglishPDF # 1 8.98 x .59 x 5.98l, .78 #File Name: 0521319870256 pages | File size: 74.Mb

Knut Schmidt-Nielsen : Scaling: Why is Animal Size so Important? before purchasing it in order to gage whether or not it would be worth my time, and all praised Scaling: Why is Animal Size so Important?:

0 of 1 people found the following review helpful. Clean/quickBy Michael AndersonClean10 of 10 people found the following review helpful. Good (Complete), But a Little Short on MechanismsBy Brian L DavisScaling covers both the various ways in which the size shape of animals change, as well as the reasons or rationals behind such scaling laws. The book does a great job of presenting the data in an understandable format (and a lot of data as well!), but

there were times I felt a little confused as to the physical reasons behind these scalings (perhaps because not all the details are known). For the most part however the explainations were clear, and for the statistics of scaling in the animals world I can think of no comparable text. Some of the subjects are scaling of eggs, running jumping, bone strength, but the most detailed sections (one of the strengths of the book) deal with the metabolism of animals; why a man's heart must beat faster than an elephants and slower than a hummingbirds, for instance. It's not a light read, and if all you want is physiology try his other book "Animal Physiology" (textbook) or Vogel's "Life's Devices" (more of a popular press book, but suitable as a teaching text).17 of 17 people found the following review helpful. Oriented toward physiologyBy William AdairSchmidt-Nielsen's "Scaling: why is animal size so important" is a readable introduction to the influence of size on physiology (and vice versa). As noted in a previous review, the chapter describing structural engineering is relatively weak, but the chapters discussing allometric concepts, metabolism, thermoregulation, and physiological time are excellent. Other chapters address respiration and circulation.Unfortunately, Schmidt-Nielsen glosses over the ecological ramifications of the physiological mechanisms described in this book. For the ecologically oriented, I recommend Calder's "Size, function, and life history."All in all, an eye-opener and a heck of a lot more fun to read than most technical works.

This book is about the importance of animal size. We tend to think of animal function in chemical terms and talk of water, salts, proteins, enzymes, oxygen, energy, and so on. We should not forget, however, that physical laws are equally important, for they determine rates of diffusion and heat transfer, transfer of force and momentum, the strength of structures, the dynamics of locomotion, and other aspects of the functioning of animal bodies. Physical laws provide possibilities and opportunities for an organism, yet they also impose constraints, setting limits to what is physically possible. This book aims to give an understanding of these rules because of their profound implications when we deal with animals of widely different size and scale. The reader will find that the book raises many questions. Remarkable and puzzling information makes it read a little like a detective story, but the last chapter, instead of giving the final solution, neither answers all questions nor provides one great unifying principle.

..."a must for teachers who like to add thought-provoking material to lectures or class discussions." The Science TeacherFrom the Back CoverThis book is about importance of animal size. We tend to think of animal function in chemical terms and talk of water, salts, proteins, enzymes, oxygen, energy, and so on. We should not forget, however, that physical laws are equally important, for they determine rates of diffusion and heat transfer, transfer of force and momentum, the strength of structures, the dynamics of locomotion, and other aspects of the functioning of animal bodies. This book aims to give an understanding of these rules because of their implications when we deal with animals of widely different size and scale.