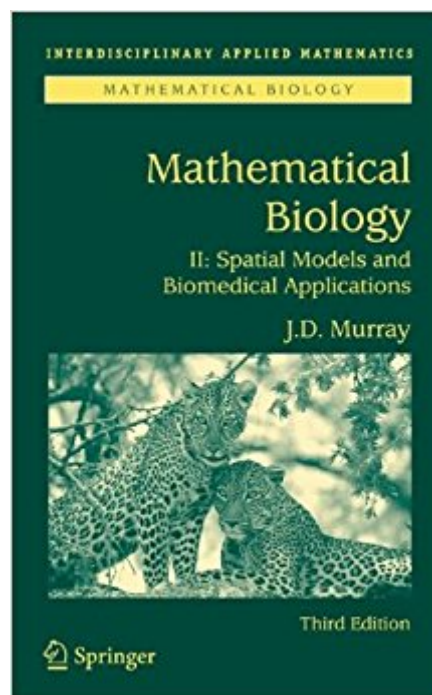




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# Mathematical Biology II: Spatial Models And Biomedical Applications (Interdisciplinary Applied Mathematics) (v. 2)



## Synopsis

This richly illustrated third edition provides a thorough training in practical mathematical biology and shows how exciting mathematical challenges can arise from a genuinely interdisciplinary involvement with the biosciences. It has been extensively updated and extended to cover much of the growth of mathematical biology. From the reviews: ""This book, a classical text in mathematical biology, cleverly combines mathematical tools with subject area sciences."--SHORT BOOK REVIEWS

## Book Information

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## Customer Reviews

From the reviews: "The 2nd volume of the authors elucidating work highlights a surprisingly broad spectrum of applications in the field of mathematical biology. The sense given to the mathematical texture of thoughts broadens the reader's insight. The growing number of specialists in sub-disciplines of mathematical biology will be enjoying the truly concise approach. It can so be said that the foremost results might be essential for new interpretations of data. It is a recommended text for mathematicians." (Daniel Gertsch, Bioworld, Issue 2, 2004) From the reviews of the third edition: "This is the second volume of the third edition of Murray's *Mathematical Biology*. It covers a wide variety of problems in pattern formation, each discussed in its biological context. This volume alone is a large book, with more than 800 pages and a similar number of references.

"it is a valuable collection of results from different areas of mathematical biology." (Carlo Laing, New Zealand Mathematical Society Newsletter, Issue 90, April, 2004) "This book, a classical text in mathematical biology, cleverly combines mathematical tools with subject area sciences. The multi-layer way of material presentation makes the book useful for different types of reader including graduate-level students, bioscientists. It is an enjoyable reading and I recommend it to anyone with serious interest in mathematical modelling." (V.V. Fedorov, Short Book Reviews, Vol. 23 (3), 2003) "This second volume of the third edition of Murray Mathematical biology focuses on partial differential equations (spatial models) and their application to the biomedical sciences. Each chapter deals with its particular topic in great detail, usually focusing on one biological example and the associated mathematical model and results. This volume is not an introductory text making it extremely useful in graduate courses and for reference." (Trachette L. Jackson, Mathematical Reviews, 2004b) "In this second volume the development towards specific biological configurations and towards a mechanism for understanding morphogenesis represents an important portion of the work. Chapters deal with attractive topics. There is an extensive index at the end. very interesting and strongly recommended." (A. Akutowicz, Zentralblatt MATH, Vol. 1006, 2003) "In this volume it becomes clear that compiling the third edition was a labor of love. The book has a significantly different feel from the original first edition. My reaction to the third edition was positive. The historical and biological overviews have much interesting information. Certainly, the spicy writing will keep students alert. In summary, I recommend the new and expanded third edition to any serious young student interested in mathematical biology." (Leah Edelstein-Keshet, SIAM Review, Vol. 46 (1), 2004) "Mathematical Biology would be eminently suitable as a text for a final year undergraduate or postgraduate course in mathematical biology. It is also a good source of examples for courses in mathematical methods. Mathematical Biology provides a good way into the field and a useful reference for those of us already there. It may attract more mathematicians to work in biology by showing them that there is real work to be done." (Peter Saunders, The Mathematical Gazette, Vol. 90 (518), 2006)

I bought part I a few years ago. I am an economist interested in using examples from biology to explain and model commercial markets, more as a hobby than as a professional. I recently worked on Lotka-Volterra predator prey models and competitive models (a grey squirrel competing a brown squirrel out of business). I hope to find patterns in time series that are similar to patterns in

economic time series. Book I covers this but most of the subject is in book II. With help of the Mathematica package I played with the examples in the book and it worked fine. It is a high level mathematical book and although the approach is pragmatic and well written, this book is primarily written for specialized mathematicians which I am not. However I like these two books very much just because of the mathematical depth. Normally the author decides how deep I will dig into matters, here I can decide myself.

So useful for theoretician biologists ! No need to say more !

As Expected.

Many reviews here are about the old edition of Mathematical Biology (the softcover one volume, 2nd ed). Recently J.D. Murray split the second edition in two hardcover volumes. Volume 1 discusses mainly models that use Ordinary Differential Equation, while slightly more complicated Math is required for Volume 2. These new books have added topics (modelling of marital interaction, temperature-dependent sex determination, wolf territoriality, etc). While sometimes the model is still very simple and in its initial stages (e.g. marital interaction model), the books show how much biology and applied mathematics intersect, and they make very interesting read. There is a certain lack of analysis of the nonlinear cases, so for those who need examples of amplitude equations, different ways of perturbing a linear model, these books are not so good. These books might be too complicated for a bio person with not much mathematical background, but it is very accessible to those with some math background, and are certainly easy for Math or Physics people who want to know more applications to biology.

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